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Tier One Performance Screen Initial Operational Test and Evaluation: 2012 Annual Report

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Human Resources Research Organization

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In addition to educational, physical, and moral screens, the U.S. Army relies on the Armed Forces Qualification Test (AFQT), a composite score from the Armed Services Vocational Aptitude Battery (ASVAB), to select new Soldiers into the Army. Although the AFQT is useful for selecting new Soldiers, other personal attributes are important to Soldier performance and retention. Based on previous U.S. Army Research Institute (ARI) investigations, the Army selected one promising measure, the Tailored Adaptive Personality Assessment System (TAPAS), for an initial operational test and evaluation (IOT&E), beginning administration to applicants in 2009. Criterion data are being compiled at 6-month intervals from administrative records, from schools for selected military occupational specialties (MOS), and from Soldiers in units. This is the sixth in a series of planned evaluations of the TAPAS. Similar to prior research, the cumulative results thus far suggest that several TAPAS scales significantly predict a number of criteria of interest, indicating that the measure holds promise for both selection and classification purposes. The Information / Communications Technology Literacy Test (ICTL) has also been incorporated into the IOT&E. The first evaluation results, which are promising, are presented in this report.

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We also want to extend our appreciation to the Army Test Program Advisory Team (ATPAT), a group of senior NCOs who periodically meet with ARI researchers to help guide this work in a manner that ensures its relevance to the Army and help enable the Army support required to implement the research. Members of the ATPAT are:

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TIER ONE PERFORMANCE SCREEN INITIAL OPERATIONAL TEST AND EVALUATION: 2012 ANNUAL REPORT

EXECUTIVE SUMMARY

Research Requirement:

In addition to educational, physical, and moral screens, the U.S. Army relies on the Armed Forces Qualification Test (AFQT), a composite score from the Armed Services Vocational Aptitude Battery (ASVAB), to select new Soldiers into the Army. Although the AFQT has proven to be and will continue to serve as a useful metric for selecting new Soldiers, other personal attributes, in particular non-cognitive attributes (e.g., temperament, interests, and values), are important to entry-level Soldier performance and retention (e.g., Campbell & Knapp, 2001; Ingerick, Diaz, & Putka, 2009; Knapp & Heffner, 2009, 2010; Knapp & Tremble, 2007). Based on previous research (Knapp & Heffner, 2010), the Army selected one particularly promising measure, the Tailored Adaptive Personality Assessment System (TAPAS), as the basis for an initial operational test and evaluation (IOT&E) of the *Tier One Performance Screen* (TOPS). The TAPAS capitalizes on the latest advances in testing technology to assess motivation through the measurement of personality characteristics.

Procedure:

In May 2009, the Military Entrance Processing Command (MEPCOM) began administering the TAPAS on the computer adaptive platform for the ASVAB (CAT-ASVAB) at Military Entrance Processing Stations (MEPS). For a period of several months, the Information/Communications Technology Literacy (ICTL) test was also administered to Army applicants. To evaluate the TAPAS and ICTL, outcome (criterion) data are being collected at multiple points in time from Soldiers who took the TAPAS at entry. Specifically, initial military training (IMT) criterion data are being collected at schools for Soldiers in eight military occupational specialties (MOS). Project teams are also collecting criterion data from Soldiers (regardless of MOS) in their units in multiple waves of site visits during the course of the IOT&E.

The criterion measures include job knowledge tests, an attitudinal assessment (the Army Life Questionnaire), and performance rating scales completed by the Soldiers' cadre members (in IMT) or supervisors (in units). Course grades, completion rates, and attrition status are obtained from administrative records for all Soldiers.

A data file containing TAPAS data collected through September 2012 and criterion data collected through December 2012 is the basis for the analyses documented in this report. It consists of a total of 344,953 applicants who took the TAPAS; 309,110 of these individuals were in the TOPS "Applicant Sample." The Applicant Sample (used for analysis purposes) excluded Education Tier 3, AFQT Category V, and prior service applicants. The validation sample sizes were considerably smaller, with the IMT Validation Sample comprising 17,670 Soldiers, the In-Unit Validation Sample comprising 1,053 Soldiers, and the Administrative Validation Sample

(which includes Soldiers with criterion data [e.g., attrition] from at least one administrative source) comprising 141,170 Soldiers. The ICTL Validation Sample comprises 1,758 Soldiers who took the ICTL when it was being administered to Army applicants from May 2011 to January 2012.

Data from the job knowledge tests, rating scales, attitudinal assessment, and administrative sources were combined to yield an array of scores representing important Soldier outcomes. In general, the criterion scores exhibited acceptable and theoretically consistent psychometric properties. The exception to this was the rating scales, which continued to exhibit low inter-rater reliability. Results involving the rating scales should continue to be interpreted with caution.

Our approach to analyzing the TAPAS' incremental predictive validity was consistent with previous evaluations of this measure and similar experimental non-cognitive predictors (e.g., Ingerick et al., 2009; Knapp & Heffner, 2009, 2010, 2011). In brief, this approach involved testing a series of hierarchical regression models, regressing scores for each criterion measure onto Soldiers' AFQT scores or education tier in the first step, followed by their TOPS composite or TAPAS scale scores in the second step. The resulting increment in the multiple correlation value (ΔR) when the TOPS composite or TAPAS scale scores were added to the baseline regression models served as our index of incremental validity. Scale-level correlations between TAPAS scale scores and selected criteria were also examined. Analyses used the original (operational at the time of administration) TOPS Will-Do and Can-Do composite scores as well as revised Will-Do and Can-Do composite scores plus a new Adaptation composite score.

Our approach to analyzing the ICTL's predictive and discriminant validity was consistent with previous evaluations of similar experimental non-cognitive predictors, however we focused on Soldiers in five MOS, one of which involves cyber-related job duties. The approach involved testing a series of hierarchical regression models, regressing scores for each criterion measure onto Soldiers' AFQT scores or education tier in the first step, followed by their ICTL composite score in the second step. The resulting increment in the multiple correlation value (ΔR) when the ICTL composite was added to the baseline regression models served as the index of incremental validity for the measure. Scale-level correlations between the ICTL and selected criteria were also examined.

Findings:

Results of the incremental validity analyses indicate that the TAPAS predicts important first-term criteria over and above the AFQT, especially measures tapping non-technical aspects of Soldier performance, such as physical fitness, adjustment to Army life, commitment and fit, and discipline. The revised Will-Do composite was associated with the greatest incremental validity gains compared to other TOPS composites. This was especially true for the prediction of physical fitness. None of the TOPS composites demonstrated utility in incrementing the AFQT in the prediction of attrition up to 30 months in service. Results of the previously reported classification analyses, however, indicated that the TAPAS has the potential to enhance matching new Soldiers to MOS, particularly for minimizing attrition.

Results of the ICTL validity analyses suggest that the ICTL test is a valid predictor of both Can Do and Will Do performance dimensions across both cyber-focused MOS and other MOS. Attempts to examine discriminant validity evidence were complicated by the lack of MOS-specific criterion data for the cyber-focused MOS (25B) included in the database. Administration of MOS-specific criterion measures for 25B Soldiers began well after the IOT&E began, so it will take more time to get sufficient sample sizes to support discriminant validity analyses.

Utilization and Dissemination of Findings:

The research findings will be used by the Army Deputy Chief of Staff, G-1; U.S. Army Recruiting Command; Assistant Secretary of the Army (Manpower and Reserve Affairs); and Training and Doctrine Command to evaluate the effectiveness of tools used for Army applicant selection and assignment. With each successive set of findings, the TOPS can be revised and refined to meet Army needs and requirements.

TIER ONE PERFORMANCE SCREEN INITIAL OPERATIONAL TEST AND EVALUATION: 2012 ANNUAL REPORT

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CHAPTER 1: INTRODUCTION

Deirdre J. Knapp (HumRRO), Kate LaPort, Tonia S. Heffner, and Leonard A. White (ARI)

Background

The Personnel Assessment Research Unit (PARU) of the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) is responsible for conducting personnel research for the Army. The focus of PARU's research is maximizing the potential of the individual Soldier through effective selection, classification, and retention strategies.

In addition to educational, physical, and moral screens, the U.S. Army relies on the Armed Forces Qualification Test (AFQT), a composite score from the Armed Services Vocational Aptitude Battery (ASVAB), to select new Soldiers into the Army. Although the AFQT has proven to be, and will continue to serve as, a useful metric for selecting new Soldiers, other personal attributes, in particular non-cognitive attributes (e.g., temperament, interests, and values), are important to entry-level Soldier performance and retention (e.g., Knapp & Tremble, 2007).

In December 2006, the Department of Defense (DoD) ASVAB review panel—a panel of experts in the measurement of human characteristics and performance— released their recommendations (Drasgow, Embretson, Kyllonen, & Schmitt, 2006), several of which focused on supplementing the ASVAB with additional measures for use in selection and classification decisions. The ASVAB review panel further recommended that the use of these measures be validated against performance criteria.

Just prior to the release of the ASVAB review panel's findings, ARI had initiated a longitudinal research effort, *Validating Future Force Performance Measures (Army Class),* to examine the prediction potential of several non-cognitive measures (e.g., temperament and person-environment fit) for Army outcomes (e.g., performance, attitudes, attrition). The Army Class research project was a 6-year effort conducted with contract support from the Human Resources Research Organization ([HumRRO]; Allen, Knapp, & Owens, in preparation; Ingerick, Diaz, & Putka, 2009; Knapp & Heffner, 2009). Experimental predictors were administered to new Soldiers in 2007 and early 2008. Army Class collected school-based criterion data on a subset of the Soldier sample as they completed job training. Job performance criterion data were collected from Soldiers in the Army Class longitudinal validation sample in 2009 and a second round of "in-unit" data collections was completed in April 2011 (Knapp, Owens, & Allen, 2012). Final analysis and reporting of this program of research is complete (Allen, Knapp, & Owens, in preparation).

After the Army Class research was underway, ARI initiated the *Expanded Enlistment Eligibility Metrics (EEEM)* project (Knapp & Heffner, 2010). The EEEM goals were similar to Army Class, but the focus was specifically on Soldier selection and the time horizon was much shorter.

Specifically, EEEM required identification of one or more promising new predictor measures for immediate implementation. The EEEM project capitalized on the existing Army Class data collection procedure and, thus, the EEEM sample was a subset of the Army Class sample.

As a result of the EEEM findings, Army policy-makers approved an initial operational test and evaluation (IOT&E) of the *Tier One Performance Screen (TOPS).* This report is the sixth in a series presenting continuing analyses from the IOT&E of TOPS.

The Tier One Performance Screen (TOPS)

Six experimental pre-enlistment measures were included in the EEEM research (Allen, Cheng, Putka, Hunter, & White, 2010). These included several temperament measures, a situational judgment test, and two person-environment fit measures based on values and interests. The most promising measures recommended to the Army for implementation were identified based on the following considerations:

- Incremental validity over AFQT for predicting important performance and retention-related outcomes
- Minimal subgroup differences
- Low susceptibility to response distortion (e.g., faking optimal responses)
- Minimal administration time requirements

The Tailored Adaptive Personality Assessment System ([TAPAS]; Stark, Chernyshenko, & Drasgow, 2010) surfaced as the top choice, with the Work Preferences Assessment ([WPA]; Putka & Van Iddekinge, 2007) identified as another good option that was substantively different from the TAPAS. Specifically, the TAPAS is a measure of personality characteristics (e.g., achievement, sociability) that capitalizes on the latest advances in psychometric theory and provides a good indicator of personal motivation. The WPA asks applicants to indicate their preference for various kinds of work activities and environments (e.g., "A job that requires me to teach others," "A job that requires me to work outdoors"). Although not included in the EEEM research, the Information/ Communications Technology Literacy (ICTL) test emerged as a potential test of applicants' familiarity with computers and information technology, which may predict performance in high-technology occupations (Russell & Sellman, 2009).

In May 2009, the Military Entrance Processing Command (MEPCOM) began administering the TAPAS on the computer adaptive platform for the ASVAB (CAT-ASVAB). Initially, the TAPAS was to be administered only to Education Tier 1, non-prior service applicants.[1] This limitation to Education Tier 1 was removed early in CY2011 so the Army could evaluate the TAPAS across all types of applicants.

TOPS uses non-cognitive measures to identify applicants who would likely perform differently (higher or lower) than would be predicted by their ASVAB scores. As part of the TOPS IOT&E, TAPAS scores are being used to screen out a small number of AFQT Category IIIB/IV

[1] Applicant educational credentials are classified as Tier 1 (primarily high school diploma), Tier 2 (primarily non-diploma graduate), and Tier 3 (not a high school graduate).

applicants.[2] Although the WPA is part of the TOPS IOT&E, WPA scores will not be considered for enlistment eligibility. The WPA is scheduled for administration at MEPS starting in late CY2013.

Although the initial conceptualization for the IOT&E was to use the TAPAS as a tool for "screening in" Education Tier 1 applicants with lower AFQT scores, changing economic conditions spurred a reconceptualization that led to using the TAPAS as a tool that screens out low motivated applicants. Recruiting conditions continue to shift, so both the IOT&E and any subsequent fully operational system will need to adjust to fit with the applicant market. TAPAS composite scores and cut points can be modified as needed to fit recruiting market conditions.

Evaluating TOPS

To evaluate the pre-enlistment measures (TAPAS, WPA, and ICTL), the Army is collecting training criterion data on Soldiers in eight target military occupational specialties (MOS) as they complete initial military training (IMT).[3] The criterion measures include job knowledge tests (JKTs); an attitudinal assessment, the Army Life Questionnaire (ALQ); and performance rating scales (PRS) completed by the Soldiers' cadre. These measures are computer-administered at the schools (initial military training) for each of the eight target MOS. The process is overseen by Army personnel with guidance and support from both ARI and HumRRO. Course grades and completion rates are obtained from administrative records for all Soldiers who take the TAPAS, regardless of MOS.

Criterion data are also being collected from Soldiers and their supervisors during data collection trips to major Army installations. These proctored "in-unit" data collections began in January 2011 and target all Soldiers who took the TAPAS prior to enlistment. The in-unit criterion measures include JKTs, the ALQ attitudinal assessment, and supervisor ratings of performance. The data collection model closely mirrors that which was used in the Army Class research program (Knapp et al., 2012). Separation status of all Soldiers who took the TAPAS prior to enlistment is tracked throughout the course of the research.

This report describes the sixth iteration of developing a criterion-related validation data file and conducting evaluation analyses using data collected in the TOPS IOT&E initiative. Prior evaluations are described in a series of technical reports (Knapp & Heffner, 2011, 2012; Knapp, Heffner, & White, 2011; Knapp & LaPort, 2013a, 2013b). Additional analysis datasets and validation analyses will be prepared and conducted at 6-month intervals throughout the multi-year IOT&E period. For the first time, the current evaluation includes results related to the ICTL test.

[2] Examinees are classified into categories based on their AFQT percentile scores (Category I = 93-99, Category II = 65-92, Category IIIA = 50-64, Category IIIB = 31-49, Category IV = 10-30, Category V = 1-9).

[3] The target MOS are Infantryman (11B), Armor Crewman (19K), Signal Support Specialist (25U), Military Police (31B), Human Resources Specialist (42A), Health Care Specialist (68W), Motor Transport Operator (88M), and Light Wheel Vehicle Mechanic (91B). These MOS were selected to include large, highly critical MOS as well as to represent the diversity of work requirements across MOS.

Overview of Report

Chapter 2 explains how the evaluation analysis data files are constructed and then describes characteristics of the samples resulting from construction of the latest analysis data file. Chapter 3 describes the TAPAS and ASVAB, including content, scoring, and psychometric characteristics. Chapter 4 describes the IMT and in-unit criterion scores used in this evaluation, including their psychometric characteristics. Criterion-related validation analyses for the TAPAS are presented in Chapter 5. Chapter 6 describes the ICTL test, its psychometric properties, and criterion-related validation results. The report concludes with Chapter 7, which summarizes our continuing efforts to evaluate TOPS and looks toward plans for future iterations of these evaluations.

CHAPTER 2: DATA FILE DEVELOPMENT

D. Matthew Trippe, Bethany Bynum, Karen Moriarty, and Chad Peddie (HumRRO)

Overview of Process

The TOPS data file comprises predictor and criterion data obtained from administrative, IMT, and in-unit sources. The IMT and in-unit assessments are described in Chapter 4.

An illustrative view of the TOPS analysis file construction process is provided in Figure 2.1.[4] The lighter boxes within the figure represent source data files, and the darker boxes represent samples on which descriptive or inferential analyses are conducted. Samples are formed by applying filters to a data file such that it includes the observations of interest. The leftmost column in the figure summarizes the predictor data sources used to derive the TOPS Applicant Sample. The other columns summarize the research-only (i.e., non-administrative) and administrative criterion data. Predictor and criterion data are merged to form the IMT or in-unit

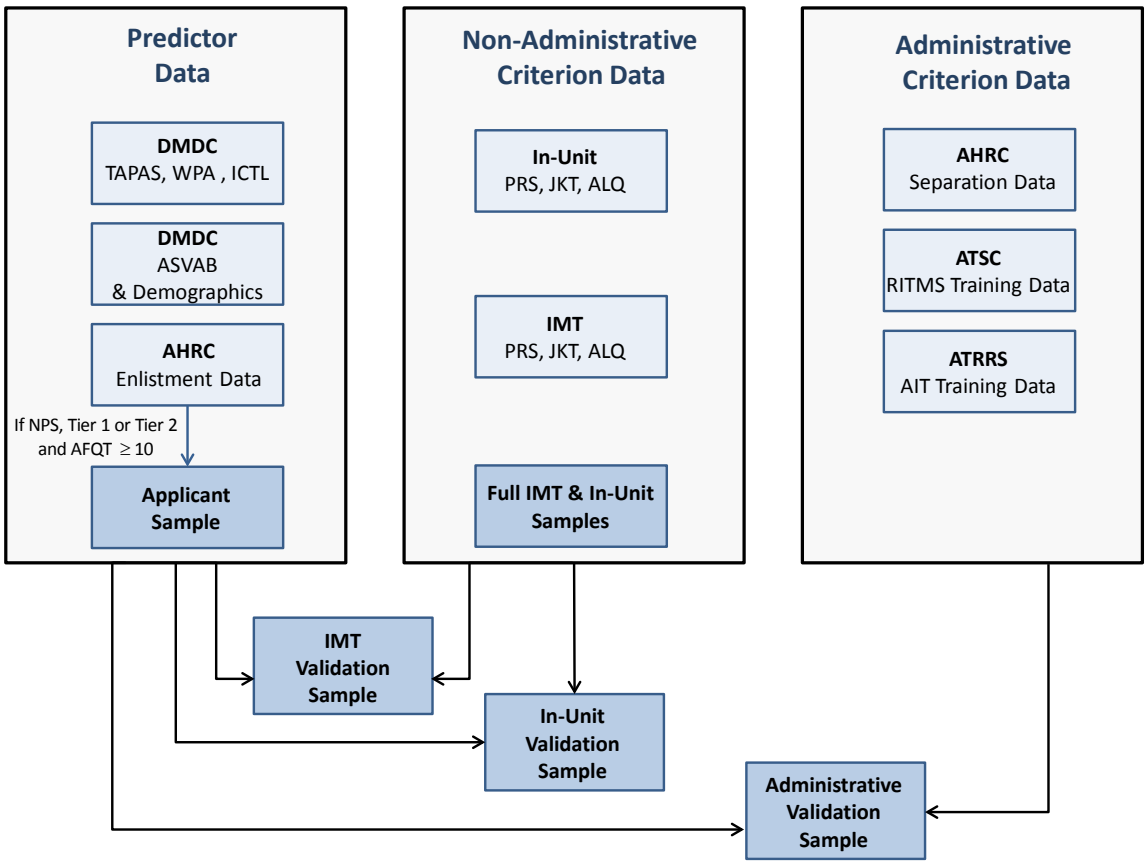

Figure 2.1. **Overview of TOPS data file merging and nested sample generation process.**

[4] Administrative data are collected from the following sources: (a) Defense Manpower Data Center (DMDC), (b) Army Human Resources Command (AHRC), (c) Army Training Support Center's (ATSC) Resident Individual Training Management System (RITMS), and (d) Training and Doctrine Command's (TRADOC) Army Training Requirements and Resources System (ATRRS).

validation samples and the large administrative validation sample, which includes all Soldiers who have predictor data and at least one criterion record (e.g., administrative data). The latest version of the TOPS data file does not contain WPA predictor scores since that measure is not yet being administered to Army applicants.

Description of Data File and Sample Construction

The latest data file, created in December 2012, includes TAPAS data collected from May 2009 through September 2012 and criterion data collected through December 2012. Table 2.1 summarizes the relevant characteristics of the total TAPAS sample contained in the December 2012 TOPS data file. The total sample includes applicants who did not enlist in the Army. The TOPS Applicant Sample was defined by limiting records in the total sample data file provided by MEPCOM to those Soldiers who are non-prior service, Education Tier 1 or 2[5], and have an AFQT score of 10 or greater. Among the 344,953 applicants in the total, unfiltered sample, 309,110 (89.6%) met these screens and constituted the Applicant Sample.

Sample sizes reported in all subsequent chapters and appendices will generally be smaller than the initial numbers reported here because of further data filtering or disaggregation that occurs for each particular analysis. Predictor and criterion scores were determined to be valid if they passed multiple data quality screens intended to identify unmotivated applicants. Those additional screens have not yet been applied to the samples described in this chapter because they are often specific to a particular analysis. Further, a relatively small number of Soldiers (1,646) in the Applicant Sample who were administered an early version of the TAPAS were excluded from analyses because of conceptual dissimilarities with subsequent TAPAS forms.

A detailed breakout of background and demographic characteristics observed in the analytic samples appears in Table 2.2. Regular Army Soldiers comprise a majority of the cases in each sample. The samples are predominantly male, Caucasian, and non-Hispanic; however, a large percentage of Soldiers declined to provide information on race or ethnicity.

The Administrative Validation Sample described in Table 2.2 includes 141,170 Soldiers. Included in this sample are Soldiers who meet all of the inclusion criteria for the TOPS Applicant Sample and also have at least one record in an administrative criterion data source (i.e., Army Training Requirements and Resources System [ATRRS], Resident Individual Training Management System [RITMS], attrition). However, the number of Soldiers included in any individual analysis is generally much smaller. The exact number of Soldiers varies by criterion depending on the availability of valid data on key variables. Specific sample details on each criterion variable are provided in subsequent chapters.

Although there are 52,606 Soldiers in the Full IMT data file, only 17,670 had taken the TAPAS when they applied for enlistment. There are two primary reasons for this disconnect. First, early in the research effort most of the Soldiers tested at the schools had taken their pre-enlistment

[5] Starting with the June 2012 TOPS data file, we incorporated education tier information from a AHRC data source to best capture a Soldier's education tier status at the time of his or her accession. As a result, figures for education tier reported in the current report will differ from corresponding figures in previous reports. The differences were generally minor and did not impact the overall results or findings.

tests before MEPCOM started administering the TAPAS widely to applicants. Second, we rely on name and date of birth to match TAPAS records to the criterion data, which often results in unsuccessful matches. As expected, the analysis data files have shown progressively higher match rates between Soldiers tested in the schools and those tested pre-enlistment. The overall match rate at this stage (33.5%) compares to 5.5% in the first semi-annual evaluation cycle (Trippe, Ford, Bynum, & Moriarty, 2012). The match rate for new cases added this cycle was 66.8%. Similarly, there are 3,780 Soldiers with in-unit data but only 1,053 of these Soldiers have matching TAPAS data. There are 189 Soldiers with a TAPAS record and both IMT and in-unit criterion data.

Table 2.1. ***Full TAPAS Data File Characteristics***

Variables	*n*	% of Total Sample (*N* = 344,953)
Education Tier		
Tier 1	320,593	92.9
Tier 2	18,479	5.4
Tier 3	5,876	1.7
Unknown	5	0.0
Prior Service		
Yes	8,471	2.5
No or Missing	336,482	97.5
Military Occupational Specialty		
11B/11C/11X/18X	29,069	8.4
19K	1,597	0.5
25U	2,884	0.8
31B	7,625	2.2
42A	4,154	1.2
68W	9,011	2.6
88M	8,764	2.5
91B	8,270	2.4
Other	102,879	29.8
Unknown	170,700	49.5
AFQT Category		
I	22,072	6.4
II	97,623	28.3
IIIA	65,959	19.1
IIIB [b]	104,186	30.2
IV [b]	49,439	14.3
V	5,662	1.6
Contract Status		
Signed	211,418	61.3
Not signed	133,535	38.7
Applicant Sample [c]	309,110	89.6

[a] Generally, when the MOS is unknown, it is either because the respondent did not access into the Army or because the information was not yet available in the data sources on which the Dec 2012 data file was based.
[b] AFQT Category IIIB and IV is oversampled. Figures presented are not representative of Army accessions.
[c] The Applicant Sample size is smaller than the total TAPAS sample because it is limited to non-prior service, Education Tier 1 and 2, and AFQT ≥ 10 applicants.

Table 2.2. ***Background and Demographic Characteristics of the TOPS Samples***

	Applicant [a] *n* = 309,110		Administrative Validation [b] *n* = 141,170		IMT Validation [c] *n* = 17,670		In-Unit Validation [d] *n* = 1,053	
Characteristic	*n*	*%*	*n*	*%*	*n*	*%*	*n*	*%*
Component								
Regular	181,358	58.7	81,064	57.4	10,585	59.9	1,049	99.6
ARNG	88,552	28.6	41,122	29.1	5,248	29.7	--	--
USAR	39,200	12.7	18,966	13.4	1,837	10.4	--	--
Unknown	--	--	18	0.0	--	--	4	.4
Education Tier								
Tier 1	292,165	94.5	135,833	96.2	17,011	96.3	1,031	97.9
Tier 2	16,945	5.5	5,337	3.8	659	3.7	22	2.1
Military Occupational Specialty								
11B/11C/11X/18X	26,220	8.5	23,810	16.9	7,187	40.7	180	17.1
19K	1,480	0.5	1,296	0.9	353	2.0	19	1.8
25U	2,692	0.9	2,260	1.6	12	0.1	13	1.2
31B	6,932	2.2	6,020	4.3	2,816	15.9	34	3.2
42A	3,791	1.2	3,136	2.2	465	2.6	37	3.5
68W	8,349	2.7	7,371	5.2	3,212	18.2	44	4.2
88M	7,998	2.6	6,549	4.6	2,732	15.5	56	5.3
91B	7,513	2.4	6,320	4.5	428	2.4	57	5.4
Other	93,821	30.4	84,197	59.6	465	2.6	613	58.2
Unknown	150,314	48.6	211	0.1	--	--	--	--
AFQT Category								
I	19,758	6.4	10,397	7.4	1,346	7.6	67	6.4
II	88,826	28.7	47,382	33.6	6,801	38.5	320	30.4
IIIA	60,156	19.5	30,670	21.7	3,748	21.2	224	21.3
IIIB	95,310	30.8	45,835	32.5	5,027	28.4	397	37.7
IV	45,060	14.6	6,886	4.9	748	4.2	45	4.3
Gender								
Female	62,076	20.1	24,032	17.0	2,308	13.1	163	15.5
Male	243,091	78.6	115,524	81.8	15,195	86.0	886	84.1
Race								
African American	59,917	19.4	23,583	16.7	2,243	12.7	220	20.9
American Indian	2,392	0.8	1,001	0.7	141	0.8	5	0.5
Asian	9,965	3.2	4,743	3.4	542	3.1	41	3.9
Hawaiian/Pacific Islander	1,544	0.5	751	0.5	97	0.5	6	0.6
Caucasian	221,156	71.5	106,176	75.2	13,889	78.6	733	69.6
Multiple	1,254	0.4	619	0.4	81	0.5	2	0.2
Declined to Answer	12,857	4.2	4,277	3.0	675	3.8	46	4.4
Ethnicity								
Hispanic/Latino	46,739	15.1	20,221	14.3	2,160	12.2	127	12.1
Not Hispanic	250,022	80.9	117,308	83.1	14,931	84.5	891	84.6
Declined to Answer	12,330	4.0	3,627	2.6	578	3.3	35	3.3

[a] Limited to applicants who had no prior service, Education Tier 1 or 2, and AFQT ≥ 10; served as the core analysis sample.
[b] Soldiers in Applicant Sample with at least one criterion record (i.e., schoolhouse, in-unit, ATRRS, RITMS, or attrition).
[c] Soldiers in Applicant Sample with criterion data collected at schoolhouses.
[d] Soldiers in Applicant Sample with criterion data collected in units.

Summary

The TOPS data file is periodically updated by merging new TAPAS scores, administrative records, IMT, and in-unit data into one master data file. The December 2012 data file includes a total of 344,953 applicants who took the TAPAS. Of these, 309,110 were in the TOPS Applicant Sample. The Applicant Sample was determined by excluding Education Tier 3, AFQT Category V, and prior service applicants from the master data file. Of that Applicant Sample, 141,170 (45.7%) had a record in at least one of the administrative criterion data sources; 17,670 had IMT data collected from the schoolhouse and 1,053 had in-unit criterion data. Although subsequent iterations of the TOPS IOT&E data file will have progressively larger sample sizes to support validation and other evaluative analyses, these sample sizes are sufficient to warrant reasonable confidence in the evaluation results.

CHAPTER 3: DESCRIPTION OF THE PRIMARY TOPS IOT&E PREDICTOR MEASURES

Stephen Stark, O. Sasha Chernyshenko, Fritz Drasgow (Drasgow Consulting Group), and Deirdre J. Knapp (HumRRO)

The purpose of this chapter is to describe the primary predictor measures being investigated in the TOPS IOT&E (TAPAS and ASVAB). The central predictor under investigation in this analysis is the TAPAS (Drasgow, Stark, Chernyshenko, Nye, Hulin, & White, 2012; Stark et al., 2010), while the baseline predictor used by the Army is the ASVAB. Another experimental predictor, the ICTL (Russell & Sellman, 2009), is described further in Chapter 6 along with a presentation of evaluation results. Data on the final experimental predictor, the Work Preferences Assessment (WPA; Putka & Van Iddekinge, 2007), are not yet included in the analysis data files, and are therefore not discussed further in this report.

Tailored Adaptive Personality Assessment System (TAPAS)

Description

The TAPAS is a personality measurement tool originally developed by Drasgow Consulting Group (DCG) under the Army's Small Business Innovation Research (SBIR) program. The system builds on the foundational work of the Assessment of Individual Motivation ([AIM]; White & Young, 1998) by incorporating features designed to promote resistance to faking and by measuring narrow personality constructs (i.e., facets) that are known to predict outcomes in work settings. Because the TAPAS uses item response theory (IRT) methods to construct and score items, it can be administered in multiple formats: (a) as a fixed length, *non-adaptive test* where examinees respond to the same sequence of items or (b) as an *adaptive test* where each examinee responds to a unique sequence of items selected to maximize measurement accuracy for that specific examinee.

The TAPAS uses an IRT model for multidimensional pairwise preference items ([MUPP]; Stark, Chernyshenko, & Drasgow, 2005) as the basis for constructing, administering, and scoring personality tests that are designed to reduce response distortion (i.e., faking) and yield normative scores even with tests of high dimensionality (Stark, Chernyshenko, & Drasgow 2012). TAPAS items consist of pairs of personality statements for which a respondent's task is to choose the one that is "more like me." The two statements constituting each item are matched in terms of social desirability and often represent different dimensions. As a result, it is difficult for respondents to discern which answers improve their chances of being enlistment eligible. Because they are less likely to know which dimensions are being used for selection, they are less likely to identify which statements measure those dimensions, and they are less likely to be able to keep track of their answers on several dimensions simultaneously so as to provide consistent patterns of responses across the whole test. Without knowing which answers have an impact on their eligibility status, respondents should not be able to increase their scores on selection dimensions as easily as when traditional, single statement measures are used. In short, the TAPAS' features make it difficult for applicants to distort their responses to obtain more desirable scores.

The use of a formal IRT model also greatly increases the flexibility of the assessment process. A variety of test versions can be constructed to measure personality dimensions that are relevant to specific work contexts, and the measures can be administered via paper-and-pencil or computerized formats. If test content specifications (i.e., test blueprints) are comparable across versions, the respective scores can be readily compared because the metric of the statement parameters has already been established by calibrating response data obtained from a base or reference group (e.g., Army recruits). The same principle applies to adaptive testing, wherein each examinee receives a different set of items chosen specifically to reduce the error in his or her trait scores at points throughout the exam. Adaptive item selection enhances test security because there is less overlap across examinees in terms of the items presented.

Another important feature of the TAPAS is that pools of statements representing more than 20 narrow personality traits are available. The initial TAPAS trait taxonomy was developed using the results of several large scale factor-analytic studies with the goal of identifying a comprehensive set of non-redundant narrow traits. Since the TAPAS was initially developed, additional traits have been added. These narrow traits, if necessary or desired, can be combined to form either the Big Five (the most common organization scheme for narrow personality traits) or any other number of broader traits (e.g., Integrity or Positive Core Self-Evaluations). This is advantageous for applied purposes because TAPAS versions can be created to fit a wide range of applications and are not limited to a particular service branch or criterion. Selection of specific TAPAS dimensions can be guided by consulting the results of a meta-analytic study performed by DCG that mapped 22 TAPAS dimensions to several important organizational criteria for military and civilian jobs (e.g., task proficiency, training performance, attrition) (Chernyshenko & Stark, 2007), as well as subsequent validation research.

Scoring details and the criterion-related validation work that led to the inclusion of TAPAS in the TOPS IOT&E can be found in the *Expanded Enlistment Eligibility Metrics* report (Knapp & Heffner, 2010) and in earlier evaluation reports in this series (Knapp et al., 2011; Knapp & Heffner, 2011)

Multiple Versions of TAPAS

As part of the TOPS IOT&E, multiple versions of the TAPAS have been administered as ARI explores the value of new and alternative dimensions (see Table 3.1 for a list of dimension names and descriptions.) One version was nonadaptive (static), so all examinees answered the same sequence of items; the others were adaptive, so each examinee answered items tailored to his or her trait level estimates. The *15D-Static* TAPAS form was administered from mid-July to mid-September of 2009 to all examinees, and later to smaller numbers of examinees at some MEPS. The initial adaptive version (*15D-CAT-1*) was introduced in September 2009 and included the same 15 dimensions. In August 2011, three new 15-dimension adaptive versions of the TAPAS were introduced into the MEPS (*15D-CAT-2*, Forms A, B, and C) to replace the original versions. All TAPAS forms used in the IOT&E assess the same nine core dimensions, to include all of the scales in the TOPS first operational "can-do" and "will-do" composites (described next). Each 15D form also includes six of 12 experimental dimensions. The six experimental dimensions assessed vary by form. Note also that the Version 2 forms of TAPAS use statement pools that were created exclusively for ARI. In the present report, the validation analyses reported in Chapter 5 are based on the five 15-D versions of TAPAS, each administering 120 items (i.e., pairs of statements).

Table 3.1. ***TAPAS Dimensions Names and Definitions***

Facet Name	Brief Description
Achievement	High scoring individuals are seen as hard working, ambitious, confident, and resourceful.
Adjustment	High scoring individuals are well adjusted, worry free, and handle stress well.
Adventure Seeking	High scoring individuals enjoy participating in extreme sports and outdoor activities.
Aesthetics	High scoring individuals appreciate various forms of art and music and participate in art-related activities more than most people.
Attention Seeking	High scoring individuals tend to engage in behaviors that attract social attention. They are loud, loquacious, entertaining, and even boastful.
Commitment to Serve	High scoring individuals identify with the military and have a strong desire to serve their country.
Consideration	High scoring individuals are affectionate, compassionate, sensitive, and caring.
Cooperation	High scoring individuals are pleasant, trusting, cordial, non-critical, and easy to get along with.
Courage	High scoring individuals stand up to challenges and are not afraid to face dangerous situations.
Curiosity	High scoring individuals are inquisitive and perceptive; they are interested in learning new information and attend courses and workshops whenever they can.
Dominance	High scoring individuals are domineering, “take charge” and are often referred to by their peers as "natural leaders."
Even Tempered	High scoring individuals tend to be calm and stable. They don’t often exhibit anger, hostility, or aggression.
Ingenuity	High scoring individuals are inventive and can think "outside of the box."
Intellectual Efficiency	High scoring individuals believe they process information and make decisions quickly; they see themselves (and they may be perceived by others) as knowledgeable, astute, or intellectual.
Non-Delinquency	High scoring individuals tend to comply with rules, customs, norms, and expectations, and they tend not to challenge authority.
Optimism	High scoring individuals have a positive outlook on life and tend to experience joy and a sense of well-being.
Order	High scoring individuals tend to organize tasks and activities and desire to maintain neat and clean surroundings.
Physical Conditioning	High scoring individuals tend to engage in activities to maintain their physical fitness and are more likely participate in vigorous sports or exercise.
Responsibility	High scoring individuals are dependable, reliable, and make every effort to keep their promises.

Table 3.1. ***(Continued)***

Facet Name	Brief Description
Self Control	High scoring individuals tend to be cautious, levelheaded, able to delay gratification, and patient.
Selflessness	High scoring individuals are generous with their time and resources.
Situational Awareness	High scoring individuals pay attention to their surroundings and rarely get lost or surprised.
Sociability	High scoring individuals tend to seek out and initiate social interactions.
Team Orientation	High scoring individuals prefer working in teams and make people work together better.
Virtue	High scoring individuals strive to adhere to standards of honesty, morality, and "good Samaritan" behavior.

As described further in Chapter 7, these versions of the TAPAS will soon be replaced as well.

As a test security measure, form equivalence information is provided in a limited distribution addendum. Scores have been standardized within TAPAS versions to enable cross-version analyses. Descriptive statistics and intercorrelations of individual TAPAS scale scores and composite scores are provided in Appendix A.

TAPAS Composites

An initial Education Tier 1 performance screen was developed from the TAPAS-95s scales for the purpose of testing in an applicant setting (Allen et al., 2010).[6] This was accomplished by (a) identifying key criteria of most interest to the Army, (b) sorting these criteria into "can-do" and "will-do" categories (see below), and (c) selecting composite scales corresponding to the can-do and will-do criteria, taking into account both theoretical rationale and empirical results. The result of this process was two composite scores.

Can-Do Composite: The original TOPS Operational Can-Do composite consists of five TAPAS scales and is designed to predict the extent to which Soldiers can perform the technical aspects of their jobs, using indicators such as MOS-specific job knowledge, Advanced Individual Training (AIT) exam grades, and graduation from AIT/One Station Unit Training (OSUT).

Will-Do Composite: The original TOPS Operational Will-Do composite consists of five TAPAS scales (three of which overlap with the Can-Do composite) and is designed to predict the more motivational elements of job performance, such as maintaining physical fitness, adjusting to Army life, demonstrating effort, and supporting peers.

As more data became available for the dimensions included in the different TAPAS versions, additional work was done to create and evaluate new TAPAS composites. As a result of this work, the Army has approved the use of three new composites to screen applicants. In addition to

[6] TAPAS-95s was a paper-and-pencil, static version of the TAPAS used in the Army Class research.

reconfigured Can-Do and Will-Do composites, there is a "Adaptation" composite designed to predict attrition. These new composites will be used starting in FY2014, along with the introduction of three new versions of TAPAS. More information about how the new composites were developed is provided in a limited distribution addendum in a prior report. Those interested in obtaining a copy of this addendum should contact the editors for further information.

Armed Services Vocational Aptitude Battery (ASVAB) Content, Structure, and Scoring

The ASVAB is a multiple aptitude battery of tests administered by the MEPCOM. Most military applicants take the computer adaptive version of ASVAB (i.e., the CAT-ASVAB). Scores on the ASVAB tests are combined to create composite scores for use in (a) selecting applicants into the Army and (b) classifying them into an MOS. The AFQT, the composite used for selecting applicants into the Army, comprises the Verbal Expression[7] (VE), Arithmetic Reasoning (AR), and Math Knowledge (MK) tests (AFQT = 2*VE + AR + MK). Applicants must meet a minimum AFQT score to be eligible to serve in the military, and the Services favor high-scoring applicants for enlistment. AFQT percentile scores are divided into the following categories:[8]

- Category I (93-99)
- Category II (65-92)
- Category IIIA (50-64)
- Category IIIB (31-49)
- Category IV (10-30)
- Category V (1-9)

AFQT Category V Soldiers are not eligible for enlistment, Category IV accessions are greatly restricted, and priority is given to Category I-IIIA accessions.

For classification, scores on the ASVAB tests are combined to form 10 Aptitude Area (AA) composites. An applicant must receive a minimum score on the MOS-relevant AA composite(s) to qualify for classification to that MOS. For example, applicants must score a 95 in both the Electronics (EL) and Signal Communications (SC) AA composites to qualify as a Signal Support Specialist (25U). Descriptive statistics for the AFQT, ASVAB tests, and AA composites are reported in Appendix A. AFQT Category frequencies are reported in Chapter 2 (Tables 2.1 and 2.2).

Summary

The purpose of this chapter was to describe the primary predictor measures used as part of the TOPS IOT&E. The TAPAS is unique among personality measures because it uses forced-choice pairwise items and IRT to promote resistance to faking. Initial validation research conducted as part of EEEM was promising enough to warrant an IOT&E of the TAPAS. The ASVAB, which consists of multiple tests that are formed into operational selection (i.e., AFQT) and classification (i.e., AA) composites, is used as the baseline instrument for incremental validity analyses reported in Chapters 5 and 6.

[7] Verbal Expression is a scaled combination of the Word Knowledge (WK) and Paragraph Comprehension (PC) tests.
[8] For more information on ASVAB scoring, see the official website of the ASVAB, www.officialasvab.com.

CHAPTER 4: DESCRIPTION AND PSYCHOMETRIC PROPERTIES OF CRITERION MEASURES

Bethany H. Bynum and Adam S. Beatty (HumRRO)

Criterion scores to validate the TAPAS were derived from measures administered for purposes of this research and from administrative records. The research measures included job knowledge tests (JKTs), performance rating scales (PRS), and a questionnaire measuring self-reported attitudes and performance (Army Life Questionnaire [ALQ]). The original versions of these three measures were developed for the Army Class project (Moriarty, Campbell, Heffner, & Knapp, 2009), and modified, as needed, for inclusion in the TOPS IOT&E. Criterion scores drawn from Soldiers' administrative records included separation status (i.e., attrition), IMT completion, and IMT grades.

Table 4.1. ***Summary of IMT and In-Unit Criterion Measures***

Criterion Measure	Description
Soldier/Cadre Reported	
Job Knowledge Tests (JKT)	The Warrior Tasks and Battle Drills (WTBD) JKT measures knowledge that is general to all enlisted Soldiers. MOS-specific JKTs measure Soldiers' knowledge of basic facts, principles, and procedures required of Soldiers in training for a particular MOS. Each JKT includes a mix of item formats (e.g., multiple-choice, multiple-response, and rank order).
Performance Rating Scales (PRS)	The IMT PRS measure Soldiers' performance in two domains: (a) MOS-specific (e.g., learns preventive maintenance checks and services, learns to troubleshoot vehicle and equipment problems) and (b) Army-wide (e.g., exhibits effort, supports peers, demonstrates physical fitness). The IMT PRS are completed by drill sergeants or training cadre. In-unit PRS cover Army-wide dimensions only and are completed by supervisors.
Army Life Questionnaire (ALQ)	The ALQ measures Soldiers' self-reported attitudes and experiences in the Army. The IMT and in-unit versions are very similar.
Administrative	
Attrition	Separation data were obtained on participating Regular Army Soldiers at 3 months (attrition near or after the completion of Basic Combat Training), 4 months (attrition during AIT (Advanced Individual Training) /OSUT (One Site Unit Training)), 6 months (attrition near or after completion of AIT/OSUT), and at regular 3-month intervals thereafter. Attrition data through 30 months were available for the current sample.
Initial Military Training (IMT) Criteria	These data provide information about whether Soldiers restarted IMT and for what reasons, the number of times Soldiers restarted training, graduation status, and school grades for Soldiers in AIT.

In this chapter, we first describe the criterion measures, along with their distributional and psychometric properties. Then, we discuss the development of a set of criterion composites, providing distributional and psychometric information for these variables as well. The descriptive statistics and correlations among the criterion composites (shown in Appendix B) are

based on the Validation Sample (i.e., Education Tier 1 and 2, non-prior service, AFQT Category IV or above Soldiers with matching criterion data). Descriptive statistics and psychometric properties of the criterion measures for the full IMT and in-unit samples are reported in Appendix C.

Job Knowledge Tests (JKTs)

Multiple sets of JKTs (IMT and in-unit) were developed or adapted from the Select21 (Collins, Le, & Schantz, 2005) and Army Class (Moriarty et al., 2009) projects: one for Warrior Tasks and Battle Drills (WTBD), which is administered to all participating Soldiers, and a set of MOS-specific JKTs for Infantry, Armor, Military Police, Health Care Specialist, Light Wheel Vehicle Mechanic, and Motor Transport Operator Soldiers. MOS-specific JKTs for two additional MOS, Signal Support Specialist and Human Resources Specialist, were developed in the Fall of 2011. Most of the JKT items are in a multiple-choice format with two to four response options. However, other formats, such as multiple-response (i.e., check all that apply), rank ordering, and matching are also used. The items use visual images to make them more realistic and reduce reading requirements for the test.

A single, overall raw score was computed for each JKT by summing the total number of points Soldiers earned across the JKT items and computing a percent correct score based on the maximum number of points that could be obtained on each test. For the criterion-related validity analyses, we converted the total raw score to a standardized score (or *z*-score) by standardizing the scores *within* each MOS. JKT scores were flagged as not usable if the Soldier (a) omitted more than 10% of the assessment items, (b) took fewer than 5 minutes to complete the entire assessment, or (c) selected an implausible response to one of the careless responding items (Knapp et al., 2012). Table 4.2 lists the reliability estimates for the MOS-Specific JKTs and the Army-wide JKT for the IMT and in-unit sample.

Table 4.2. ***Reliability Estimates of the Job Knowledge Tests (JKTs) in the IMT and In-Unit Validation Samples***

	n	*α*		*n*	*α*
MOS-Specific (IMT)			MOS-Specific (In-Unit)		
11B/C/X + 18X	5,383	.77	11B/C/X + 18X	161	.70
19K	302	.75	19K	15	--
31B	2,538	.75	31B	29	--
42A	245	.75	42A	29	--
68W	2,705	.89	68W	35	--
88M	2,080	.76	88M	52	.77
91B	262	.90	91B	48	--
WTBD (Army-Wide)	16,086	.67	WTBD (Army-Wide)	1,019	.54

Note. WTBD = Warrior Tasks and Battle Drills. *α* = coefficient alpha. Statistics based on fewer than 50 cases are not reported. Reported alpha is the composite reliability of the scales encompassing the criterion composite. Reliability estimates across MOS were averaged to represent the All MOS combined MOS-Specific JKT reliability.

Table 4.3 lists the descriptive statistics for the IMT Army-wide and MOS-specific JKTs by education tier and Table 4.4 lists the descriptive statistics for the in-unit Army-wide and MOS-specific JKTs by education tier.

Table 4.3. ***Descriptive Statistics for the Job Knowledge Tests (JKTs) by Education Tier in the IMT Validation Sample***

Domain/JKT	*n*	*M*	*SD*	*Min*	*Max*	r_{WTBD}	r_{AFQT}
			Tier 1				
MOS-Specific							
11B/C/X + 18X	5,153	60.90	10.37	25.58	86.05	.57	.45
19K	284	61.64	12.05	20.29	85.71	.44	.26
31B	2,471	67.70	8.25	35.96	91.26	.49	.47
42A	234	55.78	12.38	25.93	81.48	.54	.50
68W	2,619	72.74	10.66	26.00	92.39	.50	.26
88M	1,997	63.61	9.98	31.94	88.89	.55	.40
91B	253	57.21	13.61	27.84	90.72	.56	.27
All MOS Combined	13,011	64.84	11.24	20.29	92.39	.56	.46
WTBD (Army-Wide)	15,476	64.60	12.56	6.45	96.77	--	.43
			Tier 2				
MOS-Specific							
11B/C/X + 18X	230	60.14	10.95	26.09	86.96	.58	.24
31B	67	69.51	7.53	52.43	85.44	.41	.36
68W	86	70.92	10.46	33.70	84.00	.57	.18
88M	83	64.68	10.29	34.72	83.33	.62	.47
All MOS Combined [a]	504	63.76	11.46	26.09	86.96	.57	.31
WTBD (Army-Wide)	610	65.09	11.87	16.13	93.55	--	.28
			Tier 1 + 2 (Combined)				
MOS-Specific							
11B/C/X + 18X	5,383	60.86	10.39	25.58	86.96	.57	.44
19K	302	61.43	11.98	20.29	85.71	.44	.25
31B	2,538	67.74	8.23	35.96	91.26	.49	.47
42A	245	55.85	12.28	25.93	81.48	.53	.49
68W	2,705	72.68	10.66	26.00	92.39	.50	.26
88M	2,080	63.66	10.00	31.94	88.89	.55	.41
91B	262	57.15	13.74	27.84	90.72	.56	.24
All MOS Combined [a]	13,515	64.80	11.25	20.29	92.39	.56	.46
WTBD (Army-Wide)	16,086	64.62	12.54	6.45	96.77	--	.43

Note. *M*s, *SD*s, Min, and Max reflect percent correct. α = coefficient alpha. WTBD = Warrior Tasks and Battle Drills. r_{WTBD} = correlation with WTBD JKT scores. r_{AFQT} = correlation with AFQT scores. All correlations are statistically significant ($p < .05$, one-tailed).Statistics based on fewer than 50 cases are not separately reported.

[a] Includes 11B, 19K, 31B, 42A, 68W, 88M, and 91B.

Table 4.4. ***Descriptive Statistics for the Job Knowledge Tests (JKTs) by Education Tier in the In-Unit Validation Sample***

Domain/JKT	*n*	*M*	*SD*	*Min*	*Max*	r_{WTBD}	r_{AFQT}
Tier 1							
MOS-Specific							
11B/C/X + 18X	159	62.31	9.96	26.76	83.10	.60	.49
88M	51	68.05	8.74	44.68	85.15	.67	.62
All MOS Combined [a]	360	64.43	10.98	26.76	90.20	.50	.47
WTBD (Army Wide)	998	65.61	11.74	23.08	96.15	--	.46
Tier 1 + 2 (Combined)[b]							
MOS-Specific							
11B/C/X + 18X	161	62.24	9.93	26.76	83.10	.60	.49
88M	52	67.79	8.85	44.68	85.15	.69	.64
All MOS Combined [a]	369	64.45	11.01	26.76	90.20	.50	.47
WTBD (Army Wide)	1,019	65.54	11.69	23.08	96.15	--	.46

Note. *M*s, *SD*s, Min, and Max reflect percent correct. α = coefficient alpha. WTBD = Warrior Tasks and Battle Drills. r_{WTBD} = correlation with WTBD JKT scores. r_{AFQT} = correlation with AFQT scores. All correlations are statistically significant ($p < .05$, one-tailed).Statistics based on fewer than 50 cases are not separately reported.

[a] Includes 11B, 19K, 31B, 42A, 68W, 88M, and 91B.

[b] Statistics for Tier 2 Soldiers are not reported separately because of insufficient sample size ($n < 10$).

Performance Rating Scales (PRS)

The PRS, like the JKTs, also were adapted from or based on previous research (see Moriarty et al., 2009 for details). The IMT and in-unit PRS are fairly different, so they will be described separately.

IMT PRS

The IMT PRS target two domains of Soldier performance requirements: (a) Army-wide and (b) MOS-specific. The IMT PRS were completed by cadre members (drill sergeants, trainers) of participating Soldiers.

Over the course of the TOPS IOT&E, two versions of the IMT PRS were administered. Early IOT&E evaluations noted low interrater reliability estimates for the PRS (Moriarty & Bynum, 2011). Accordingly, several changes were made to the IMT instruments in an attempt to improve their psychometric characteristics. First, the number of scales for the Army-wide PRS was reduced from eight to five, paralleling the five scores generated from the original scales (Sparks & Peddie, 2013). No changes were made to the MOS-specific PRS scales; the number of scales ranged from five to nine and a composite score was computed by averaging ratings across the individual scales for each MOS. Second, the rating scale for both the Army-wide and MOS-specific PRS was changed from a 7-point Behaviorally Anchored Rating Scale (BARS) to a 5-point relative scale format with scales ranging from 1 (Among the Weakest) to 5 (Among the Best). Ratings on the initial PRS rating scale were re-scaled to reflect the new 5-point scale. After doing so, we combined ratings data across the two versions of PRS to create a single PRS score. All IMT PRS results reported are based on data from the initial and revised PRS, and are expressed on a 5-point scale. Finally,

cadre members also indicated their opportunity to observe each Soldier being rated using a 4-point "familiarity" scale, in which the cadre rated his or her opportunity to observe each Soldier being rated. The initial PRS used a 3-point familiarity scale. This was changed to a 4-point scale to enable raters to more clearly indicate their ability to judge each Soldier's performance.

Table 4.5 compares the estimated interrater reliability for the initial and revised versions of the IMT PRS. The interrater reliability estimates were generally low (.30 or less) for the initial version of the PRS. As hoped, the revised PRS showed increased interrater reliability with many of the reliability estimates more than doubling. However, generally the estimates were still low. We attribute these low coefficients to several interrelated issues. First, the number of ratees per rater is high, averaging about 16 with some raters providing as many as 50 ratings. As a result, raters likely became fatigued during the rating task. Second, within-rater variance was generally limited, perhaps reflecting raters' inability to differentiate among individual Soldiers. Third, these data collections were not proctored, unlike prior research (e.g., Knapp & Heffner, 2009, 2010). Finally, the number of raters per ratee was small, averaging less than two, which limits the generalizability of single-rater reliability estimates.

Table 4.5. ***Interrater Reliability Estimates for the Performance Rating Scales (PRS) in the IMT Validation Sample***

	Original PRS		Revised PRS	
Army-Wide PRS	*n*	*IRR*	*n*	*IRR*
Commitment & Adjustment	12,256	.139	2,635	.310
Effort & Personal Discipline	12,283	.169	2,636	.423
MOS Qualification Knowledge	11,100	.095	2,324	.250
Physical Fitness & Bearing	12,184	.191	2,634	.235
Working with Others	12,216	.150	2,631	.319
Overall Performance	12,087	.318	2,593	.350
MOS-Specific PRS				
11B/C/X + 18X	3,981	.174	571	.208
19K	158	.405	--	--
31B	1,798	.107	554	.435
68W	3,099	.009	181	.074
88M	672	.000	--	--
91B	255	.106	--	--

Note. α = coefficient alpha. IRR = Interrater reliability**.** Interrater reliability was assessed using $G(q,k)$, a reliability metric designed specifically for studies like TOPS where the measurement design is ill-structured (Putka, Le, McCloy, & Diaz, 2008). IRR estimates were not estimated if 30 or fewer Soldiers were rated by more than one supervisor. Approximately 20% of Soldiers with IMT PRS data were rated by more than one cadre member.

Table 4.6 summarizes the descriptive statistics for IMT PRS by education tier. A Soldier's PRS ratings were not included in the analyses if the rater (a) indicated he or she had little opportunity to observe this Soldier, (b) omitted more than 10% of the assessment items, (c) indicated that he or she had not observed the Soldier on more than 50% of the dimensions, or (d) engaged in "flat responding"—that is, if the rater rated 10 or more Soldiers on a particular scale and 90% or more of those rating profiles were exactly the same. Mean ratings were above the mid-point, a consistent finding in prior Army research involving performance ratings (e.g., Campbell & Knapp, 2001; Knapp & Tremble, 2007; Moriarty & Bynum, 2011). The IMT PRS were also highly intercorrelated (see Appendix B).

Table 4.6. ***Descriptive Statistics for the Performance Rating Scales (PRS) by Education Tier in the IMT Validation Sample***

Domain/Setting/PRS	*n*	*M*	*SD*	*Min*	*Max*
		Tier 1			
Army-Wide					
Adjustment to the Army	5,160	3.40	1.00	1.00	5.00
Effort & Personal Discipline	5,165	3.22	.98	1.00	5.00
MOS Qualification Knowledge	4,835	3.33	.93	1.00	5.00
Physical Fitness & Bearing	5,149	3.28	.99	1.00	5.00
Working with Others	5,152	3.21	.98	1.00	5.00
Overall Performance	5,123	3.56	.83	1.00	5.00
MOS-Specific					
11B/C/X + 18X	1,462	3.18	.84	1.00	5.00
19K	79	3.31	.62	1.71	4.86
31B	1,037	3.31	.75	1.12	5.00
68W	764	2.98	.86	1.00	5.00
88M	115	2.87	.78	1.20	5.00
All MOS Combined	3,500	3.16	.82	1.00	5.00
		Tier 2			
Army-Wide					
Adjustment to the Army	177	3.45	.91	1.00	5.00
Effort & Personal Discipline	177	3.28	.88	1.00	5.00
MOS Qualification Knowledge	171	3.45	.80	2.00	5.00
Physical Fitness & Bearing	177	3.27	.86	1.00	5.00
Working with Others	177	3.39	.95	1.00	5.00
Overall Performance	176	3.45	.83	1.00	5.00
MOS-Specific					
11B/C/X + 18X	56	3.18	.71	1.83	5.00
All MOS Combined	119	3.14	.73	1.00	5.00
		Tier 1 + Tier 2 (Combined)			
Army-Wide					
Commitment & Adjustment	5,337	3.40	.99	1.00	5.00
Effort & Personal Discipline	5,342	3.22	.97	1.00	5.00
MOS Qualification Knowledge	5,006	3.34	.92	1.00	5.00
Physical Fitness & Bearing	5,326	3.28	.99	1.00	5.00
Working with Others	5,329	3.21	.98	1.00	5.00
Overall Performance	5,299	3.56	.83	1.00	5.00
MOS-Specific					
11B/C/X + 18X	1,518	3.18	.83	1.00	5.00
19K	86	3.32	.62	1.71	4.86
31B	1,064	3.31	.74	1.12	5.00
68W	789	2.98	.86	1.00	5.00
88M	119	2.86	.78	1.20	5.00
All MOS Combined	3,619	3.16	.82	1.00	5.00

Note. Statistics based on fewer than 50 cases are not reported. Ratings on PRS range from 1 and 5. PRS ratings from supervisors with a familiarity rating of 1 ("I have had little opportunity to observe this Soldier") were excluded from analyses.

In-Unit PRS

The in-unit PRS only target Army-wide dimensions of performance (i.e., there are no MOS-specific in-unit PRS) and include 12 performance dimensions, plus a Leadership Potential scale (see Table 4.10). A thirteenth scale was dropped in Fall 2011 because of poor psychometric properties and has since been replaced with an Adjustment scale, comparable to the corresponding IMT scale. Ratings on several of the individual scales are combined to form four PRS composites and three scales were left as standalone dimensions. Cronbach's alpha coefficients for the in-unit PRS composite scales are reported in Table 4.7. The in-unit PRS have consistently employed the 7-point BARS format used for the initial IMT scales. The revised 4-point "familiarity" scale used in the new IMT PRS also is used with the in-unit PRS. The majority of Soldiers in units were rated by only one supervisor, so interrater reliability estimates were not calculated. Table 4.8 reports the basic descriptive statistics for the in-unit Army-wide PRS by performance domain and education tier.

Table 4.7. ***In-Unit Army-Wide Performance Rating Scale Dimensions and Composite Scores***

In-Unit Rating Composites and Dimensions	α
Can Do	.84
Performing Core Warrior Tasks	
Performing MOS-Specific Tasks	
Processing Information	
Solving Problems	
Effort & Personal Discipline	.80
Exhibiting Effort	
Exhibiting Personal Discipline	
Working with Others	.77
Communicating with Others	
Contributing to the Team	
Self-Management	.79
Following Safety Procedures	
Developing Own Skills	
Managing Personal Matters	
Adjusting to Army Life	
Physical Fitness and Bearing	
Overall Leadership Potential Rating	

Note. Of the seven scores computed, four are composites of multiple dimensions and three are single dimension ratings.

Table 4.8. ***Descriptive Statistics and Reliability Estimates for the Performance Rating Scales (PRS) in the In-Unit Validation Sample***

PRS Dimensions/Composites	*n*	*M*	*SD*	*Min*	*Max*
Tier 1					
Can Do [a]	719	4.90	1.27	1.00	7.00
Effort & Personal Discipline [a]	719	5.29	1.34	1.00	7.00
Working with Others [a]	719	5.32	1.24	1.50	7.00
Self-Management [a]	718	5.31	1.13	1.33	7.00
Physical Fitness & Bearing	715	5.36	1.56	1.00	7.00
Overall Leadership Potential	697	4.88	1.66	1.00	7.00
Tier 1 + Tier 2 (Combined)[b]					
Can Do [a]	734	4.88	1.27	1.00	7.00
Effort & Personal Discipline [a]	734	5.27	1.34	1.00	7.00
Physical Fitness & Bearing	730	5.34	1.56	1.00	7.00
Self-Management [a]	733	5.30	1.13	1.33	7.00
Working with Others [a]	734	5.31	1.25	1.50	7.00
Overall Leadership Potential	711	4.86	1.66	1.00	7.00

Note. Ratings on PRS range from 1 and 7. PRS ratings from supervisors with a familiarity rating of 1 ("I have had little opportunity to observe this Soldier") were excluded from analyses.
[a] Ratings composite comprises two or more Army-wide PRS.
[b] Statistics for Tier 2 Soldiers are not reported separately since the sample size is less than 50 for all PRS scores.

Army Life Questionnaire (ALQ)

The ALQ was designed to measure Soldiers' self-reported attitudes and experiences in the Army. Earlier forms of the training and in-unit versions of the ALQ (Van Iddekinge, Putka, & Sager, 2005) were modified slightly for use in the TOPS IOT&E. The ALQ includes scales that cover (a) Soldiers' commitment and retention-related attitudes and (b) Soldiers' performance and adjustment. Each ALQ scale is scored differently depending on the nature of the attribute being measured. The Army Physical Fitness Test (APFT) score is a write-in item. Training Achievements, Training Restarts, (both of which appear only on the IMT version of the ALQ), and Disciplinary Incidents are simply a sum of the "yes" responses. The remaining scales (see Table 4.9) are composed of Likert-type response scales and are scored by computing a mean of the constituent item scores. Note that most scales appear on both the IMT and in-unit versions of the scales, though the IMT version has two unique scales (i.e., Normative Commitment and Army Life Adjustment).

Table 4.9. ***Army Life Questionnaire (ALQ) Likert-Type Scales***

Scale Name	Description	Number of Items	Example Item	Likert Scale Anchors
Affective Commitment	Measures Soldiers' emotional attachment to the Army.	7	I feel like I am part of the Army 'family.'	1 (strongly disagree) to 5 (strongly agree)
Normative Commitment [a]	Measures Soldiers' feelings of obligation toward staying in the Army until the end of their current term of service.	5	I would feel guilty if I left the Army before the end of my current term of service.	1 (strongly disagree) to 5 (strongly agree)
Career Intentions	Measures Soldiers' intentions to reenlist and to make the Army a career.	3	How likely is it that you will make the Army a career?	Varies by item: 1 (strongly disagree) to 5 (strongly agree); 1 (not at all confident) to 5 (extremely confident); 1 (extremely unlikely) to 5 (extremely likely)
Reenlistment Intentions	Measures Soldiers' intention to reenlist in the Army.	4	How likely is it that you will leave the Army after completing your current term of service?	1 (strongly disagree) to 5 (strongly agree)
Attrition Cognitions	Measures the degree to which Soldiers think about attriting before the end of their first term.	4	How likely is it that you will complete your current term of service?	Varies by item: 1 (strongly disagree) to 5 (strongly agree); 1 (never) to 5 (very often)
Army Life Adjustment [a]	Measures Soldiers' transition from civilian to Army life.	9	Looking back, I was not prepared for the challenges of training in the Army.	1 (strongly disagree) to 5 (strongly agree)
MOS Fit	Measures Soldiers' perceived fit with their MOS.	9	My MOS provides the right amount of challenge for me.	1 (strongly disagree) to 5 (strongly agree)
Army Fit [b]	Measures Soldiers' perceived fit with the Army.	8	The Army is a good match for me.	1 (strongly disagree) to 5 (strongly agree)

[a] Appears only on the IMT ALQ.
[b] Scale has 6 items on the in-unit ALQ.

ALQ data were flagged as unusable if the Soldier (a) omitted more than 10% of the assessment items, (b) took fewer than 5 minutes to complete the entire assessment, or (c) chose an implausible response to the careless responding item. Table 4.10 and Table 4.11 summarize the descriptive statistics for the ALQ scales by education tier for the IMT and in-unit samples, respectively.

Table 4.10. ***Descriptive Statistics and Reliability Estimates for the Army Life Questionnaire (ALQ) by Education Tier in the IMT Validation Sample***

Domain/Scale	*n*	*M*	*SD*	*Min*	*Max*	*α*
			Tier 1			
Retention						
Army Career Intentions	16,201	3.17	1.08	1.00	5.00	--
Affective Commitment	16,201	3.88	.67	1.00	5.00	--
Army Life Adjustment	16,201	4.09	.66	1.00	5.00	--
Army Fit	16,201	4.08	.60	1.00	5.00	--
Army Reenlistment Intentions	16,201	3.46	.95	1.00	5.00	--
Attrition Cognition	16,201	1.51	.60	1.00	5.00	--
MOS Fit	16,201	3.78	.84	1.00	5.00	--
Normative Commitment	16,201	4.18	.69	1.00	5.00	--
Achievement/Performance						
Disciplinary Incidents (#)	14,582	.27	.62	.00	7.00	--
Last APFT Score	16,041	252.44	30.53	109.00	300.00	--
Training Achievement (#)	16,187	.41	.62	.00	2.00	--
Training Restarts (#)	16,200	.39	.63	.00	4.00	--
			Tier 2			
Retention						
Army Career Intentions	634	3.34	1.09	1.00	5.00	--
Affective Commitment	634	4.00	.67	1.00	5.00	--
Army Life Adjustment	634	4.12	.67	1.22	5.00	--
Army Fit	634	4.13	.63	1.62	5.00	--
Army Reenlistment Intentions						
Attrition Cognition	634	1.47	.58	1.00	4.00	--
MOS Fit	634	3.85	.82	1.11	5.00	--
Normative Commitment	634	4.24	.65	2.00	5.00	--
Achievement/Perforamance						
Disciplinary Incidents (#)	600	.33	.75	.00	6.00	--
Last APFT Score	628	244.90	31.96	124.00	300.00	--
Training Achievement (#)	633	.37	.58	.00	2.00	--
Training Restarts (#)	634	.37	.60	.00	3.00	--
			Tier 1 + Tier 2 (Combined)			
Retention						
Army Career Intentions	16,835	3.17	1.08	1.00	5.00	.91
Affective Commitment	16,835	3.89	.67	1.00	5.00	.86
Army Life Adjustment	16,835	4.09	.66	1.00	5.00	.87
Army Fit	16,835	4.08	.60	1.00	5.00	.86
Army Reenlistment Intentions	16,835	3.47	.95	1.00	5.00	.83
Attrition Cognition	16,835	1.51	.59	1.00	5.00	.76
MOS Fit	16,835	3.79	.84	1.00	5.00	.92
Normative Commitment	16,835	4.18	.69	1.00	5.00	.79
Achievement/Performance						
Disciplinary Incidents (#)	15,182	.28	.62	.00	7.00	--
Last APFT Score	16,669	252.15	30.62	109.00	300.00	--
Training Achievement (#)	16,820	.41	.61	.00	2.00	--
Training Restarts (#)	16,834	.39	.63	.00	4.00	--

Note. α = coefficient alpha. Reliability estimates of the ALQ scales are reported for the full validation sample only.

Table 4.11. ***Descriptive Statistics and Reliability Estimates for the Army Life Questionnaire (ALQ) by Education Tier in the In-Unit Validation Sample***

Domain/Setting/Scale	*n*	*M*	*SD*	*Min*	*Max*
Tier 1					
Retention					
Affective Commitment	1,012	3.62	.78	1.00	5.00
Army Career Intentions	1,012	2.69	1.16	1.00	5.00
Army Reenlistment Intentions	1,011	3.08	1.16	1.00	5.00
Attrition Cognition	1,012	1.66	.72	1.00	5.00
Army Fit	1,012	3.95	.67	1.60	5.00
MOS Fit	1,012	3.28	.95	1.00	5.00
MOS Satisfaction	1,012	3.58	.87	1.00	5.00
Achievement/Performance					
Disciplinary Incidents (#)	1,012	.31	.74	.00	7.00
Last APFT Score	988	246.74	31.80	120.00	300.00
Tier 1 + Tier 2 (Combined) [a]					
Retention					
Affective Commitment	1,034	3.63	.77	1.00	5.00
Army Career Intentions	1,034	2.70	1.17	1.00	5.00
Army Reenlistment Intentions	1,033	3.09	1.16	1.00	5.00
Army Fit	1,034	3.96	.67	1.60	5.00
Attrition Cognition	1,034	1.66	.72	1.00	5.00
MOS Fit	1,034	3.28	.95	1.00	5.00
MOS Satisfaction	1,034	3.59	.87	1.00	5.00
Achievement/Performance					
Disciplinary Incidents (#)	1,034	.34	.80	.00	7.00
Last APFT Score	1,009	246.66	31.68	120.00	300.00

Note. α = coefficient alpha.
[a] Tier 2 estimates not reported since all samples sizes are less than 50.

Administrative Criteria

Attrition

Attrition is a broad category that encompasses involuntary and voluntary separations for a variety of reasons (e.g., underage enlistment, conduct, family concerns, drugs or alcohol, performance, physical standards or weight, mental disorder, or violations of the Uniform Code of Military Justice [UCMJ]). The reason for separation was determined by the Soldiers' Separation Program Designator (SPD) code. Soldiers who were classified as "attrits" (coded as 1) for reasons outside of the Soldiers' or the Army's control were excluded in our analyses (e.g., death or serious injury incurred while performing one's duties). Separation data were limited to Regular Army Soldiers because of questions regarding the reliability of administrative separation data for Reserve and National Guard Soldiers. The current analyses cover attrition through 30 months of service. Table 4.12 summarizes the basic descriptive statistics for attrition by education tier.

AIT Grade

Soldiers' final AIT course grades were extracted from RITMS (Resident Individual Training Management System). Final grades from One Station Unit Training (OSUT) courses were excluded from the data file because the variance in the grades was highly restricted or based on a pass-fail metric that was redundant with the data from ATRRS (Army Training Requirements and Resources System). Final AIT Grade represents the final cumulative grade administratively recorded for the Soldier upon graduation from AIT. A standardized version of Final AIT Grade was computed for those MOS graduating 15 or more Soldiers. Table 4.13 summarizes the final AIT grade by education tier.

Training Restarts

Soldiers' IMT completion status and whether he or she graduated from IMT with a training restarts were extracted from ATRRS. Soldiers who had not had an opportunity to complete their IMT at the time data were extracted were excluded from our analyses. Table 4.13 presents the base rates of Soldiers with at least one training restart during IMT.

Table 4.12. ***Base Rates for Attrition Criteria by Education Tier in the Validation Sample***

	Tier 1			Tier 2			Tier 1 + Tier 2 (Combined)		
Domain/Measure	N [a]	N_{Attrit}	$\%_{Attrit}$	N [a]	N_{Attrit}	$\%_{Attrit}$	N [a]	N_{Attrit}	$\%_{Attrit}$
Cumulative Attrition									
3-Month	73,989	5,053	6.8	2,720	287	10.6	76,709	5,340	7.0
6-Month	64,000	6,447	10.1	2,061	316	15.3	66,061	6,763	10.2
9-Month	52,195	5,909	11.3	1,347	221	16.4	53,542	6,130	11.4
12-Month	44,783	5,567	12.4	920	165	17.9	45,703	5,732	12.5
15-Month	38,227	5,163	13.5	407	79	19.4	38,634	5,242	13.6
18-Month	30,705	4,514	14.7	222	44	19.8	30,927	4,558	14.7
21-Month	21,665	3,526	16.3	82	18	22.0	21,747	3,544	16.3
24-Month	16,010	2,821	17.6	79	18	22.8	16,089	2,839	17.6
27-Month	9,743	1,853	19.0	76	19	25.0	9,819	1,872	19.1
30-Month	4,750	958	20.2	74	19	25.7	4,824	977	20.3

[a] N = number of Regular Army Soldiers with attrition data at the time data were extracted.
N_{Attrit} = number of Soldiers who attrited at the specified months of service. $\%_{Attrit}$ = percentage of Soldiers who attrited through the specified months of service [(N_{Attrit} /N) x 100].

Table 4.13. ***Base Rates or Basic Descriptive Statistics for Administrative IMT Criteria in the Validation Sample***

	Tier 1			Tier 2			Tier 1 + Tier 2 (Combined)		
Restarted Initial Military Training (IMT)	N [a]	$N_{Restarted}$	$\%_{Restarted}$	N [a]	$N_{Restarted}$	$\%_{Restarted}$	N [a]	$N_{Restarted}$	$\%_{Restarted}$
At Least Once During IMT	71,323	9,112	12.8	2,749	470	17.1	74,072	9,582	12.9
For Academic or Other Pejorative Reasons	70,318	8,087	11.5	2,714	434	16.0	73,032	8,521	11.7
For Academic Reasons	68,675	6,460	9.4	2,549	270	10.6	71,224	6,730	9.4
Final AIT School Grades	N [b]	*M*	*SD*	N [b]	*M*	*SD*	N [b]	*M*	*SD*
Overall Average (Unstandardized)	40,568	91.69	8.13	1,641	91.72	7.73	42,209	91.69	8.11
Overall Average (Standardized within MOS)	40,276	.05	.80	1,630	.00	.80	41,906	.05	.80

[a] N = number of Soldiers with IMT data at the time data were extracted. $N_{Restarted}$ = number of Soldiers who restarted at least once during IMT. $\%_{Restarted}$ = percentage of Soldiers who restarted at least once during IMT [($N_{Restarted}$ /N) x 100]. Standardization excludes MOS with insufficient sample size.
[b] N = number of Soldiers with AIT school grade data at time data were extracted.

Criterion Composites

A number of the criterion scales measure similar underlying constructs. Composites of these criterion scales were developed to reduce the number of criteria used to validate the TAPAS and simplify the interpretation of results, without sacrificing information. Composites were constructed using theoretical rationale and examined using Confirmatory Factor Analysis (CFA). We also considered policy-based reasons in deciding whether to keep a variable as a standalone criterion or to include it in a composite. Criteria of high interest to ARI and the Army (e.g., those of most interest to stakeholders) were left as standalone criteria. Table 4.14 lists the IMT and in-unit criterion composites, the scales included in each composite, and a brief description of how the composite was constructed. We attempted to keep the in-unit criteria similar to the IMT criteria.

The results of the confirmatory factor analyses showed strong support for the criterion composites (see Table 4.15). All of the fit-indices were within the range of acceptable values. Further, the average correlations among the corresponding scales of the composites were high. Descriptive statistics for the IMT and in-unit criterion composites are shown in Table 4.16. Composite reliability estimates were computed for the combined Tier 1 and Tier 2 sample for composites comprising more than one scale. Results were generally similar to the stand alone versions of the scales. Appendix B presents correlations among the criterion composites.

Table 4.14. ***IMT and In-Unit Criterion Scores***

IMT		
Criterion Score	Scales	Description
Overall Performance	PRS: Army Adjustment PRS: Effort and Discipline PRS: MOS Qualification PRS: Physical Fitness PRS: Working with Others PRS: MOS Specific	General effort/ motivation criterion. Scales are averaged to form the composite.
Commitment & Fit	ALQ: Affective Commitment ALQ: Normative Commitment ALQ: General MOS Fit ALQ: Needs Supplies Army Fit	General commitment to and fit with the Army. Scales are averaged to form the composite.
Retention Cognitions	ALQ: Army Career Intentions ALQ: Army Re-enlistment ALQ: Attrition Cognition	General intentions of continuance in the Army. Scales are averaged to form the composite.
Army Life Adjustment	ALQ: Army Life Adjustment	Army life adjustment remains a standalone criterion.
Physical Fitness	ALQ: Last APFT Score	Physical fitness remains a standalone criterion.
Knowledge & Skill	Army-Wide JKT MOS JKT AIT Grade	AW JKT and MOS JKT are averaged to form an overall knowledge/skill composite. For those that do not have an MOS JKT score, AIT grade is substituted.
Disciplinary Incidents	ALQ: Disciplinary Incidents	A dichotomous version of Disciplinary Incidents was constructed based on whether a Soldier indicated at least one disciplinary incident.
Training Restarts	ALQ: Training Restarts ATRRS: Training Restarts	If either the ALQ or ATRRS indicates a training restart, then Soldier is identified as having a restart.

Table 4.14. ***(Continued)***

In-Unit		
Criterion Score	Scales	Description
Attrition	6-months – 30 months attrition	Attrition status remains as standalone criteria.
Overall Performance	PRS: Can Do PRS: Effort and Personal Discipline PRS: Working with Others PRS: Self-Management PRS: Physical Fitness and Bearing	General effort/ motivation criterion. Scales are averaged to form the composite.
Leadership Potential	PRS: Overall Leadership Potential	A Soldier's potential for leadership remains a standalone criterion.
Commitment & Fit	ALQ: Affective Commitment ALQ: General MOS Fit ALQ: Needs Supplies Army Fit	General commitment to and fit with the Army. Scales are averaged to form the composite.
Retention Cognitions	ALQ: Army Career Intentions ALQ: Army Re-enlistment ALQ: Attrition Cognition	General intentions of continuance in the Army. Scales are averaged to form the composite.
Physical Fitness	ALQ: Last APFT Score	Physical fitness remains a standalone criterion.
Knowledge & Skill	Army-Wide JKT MOS JKT	AW JKT and MOS JKT are averaged to form an overall knowledge/skill composite. For those that do not have MOS JKT, only AW JKT scores are used.
Disciplinary Incidents	ALQ: Disciplinary Incidents	A dichotomous version of Disciplinary Incidents was constructed based on whether a Soldier indicated at least one disciplinary incident.

Table 4.15. ***Criterion Composite Confirmatory Factor Analysis (CFA) Model Results***

	n	χ^2	*RMSEA*	*CFI*	*TLI*	*SRMR*	avg. *r*
IMT							
Commitment/ Fit	41,611	35.56	0.02	1.00	1.00	0.00	0.60
Overall Performance	15,353	680.60	0.07	0.99	0.98	0.02	0.67
Retention Cog	41,611	0.00	0.00	1.00	1.00	0.00	0.61
Knowledge/Skill	40,128	--	--	--	--	--	0.54
In-Unit							
Commitment & Fit	2,509	0.00	0.00	1.00	1.00	0.00	0.52
Overall Performance	1,371	12.17	0.03	1.00	1.00	0.01	0.69
Retention Cog	2,509	0.00	0.00	1.00	1.00	0.00	0.57
Knowledge/Skill	2,486	--	--	--	--	--	0.45

Note. RMSEA = Root mean square error of approximation, acceptable values are < .08; SRMR = Standardized root mean square residual, acceptable values are < .08; CFI = Comparative Fit Index, acceptable values are > .95; TLI = Tucker-Lewis Index, acceptable values are > .95 (Hu & Bentler, 1999). CFA models were only fit to criterion with greater than three scales.

Table 4.16. ***Descriptive Statistics for Criterion Composites by Education Tier in the IMT and In-Unit Validation Samples***

Domain/Setting/MOS	*n*	*M*	*SD*	*Min*	*Max*	*α*
Tier 1						
IMT Composites						
Overall Performance	4,400	3.31	.78	1.00	5.00	--
Physical Fitness	14,579	252.26	30.65	109.00	300.00	--
Commitment & Fit	14,723	3.98	.58	1.13	5.00	--
Retention Cognitions	14,723	2.71	.58	1.00	4.33	--
Knowledge & Skill [a]	11,895	.05	.85	-3.83	2.27	--
Training Restarts (Y/N)	69,038	.18	.39	.00	1.00	--
Disciplinary Incidents (Y/N)	13,168	.21	.41	.00	1.00	--
Army Life Adjustment	16,201	4.09	.66	1.00	5.00	--
In-Unit Composites						
Overall Performance	664	5.24	1.12	2.02	7.00	--
Physical Fitness	923	246.61	31.78	120.00	300.00	--
Commitment & Fit	944	3.62	.66	1.51	5.00	--
Retention Cognitions	943	2.47	.64	1.00	3.83	--
Knowledge & Skill [a]	936	.06	.90	-3.64	2.29	--
Leadership Potential	650	4.88	1.67	1.00	7.00	--
Disciplinary Incidents (Y/N)	944	.21	.41	.00	1.00	--
Tier 2 [b]						
IMT Composites						
Overall Performance	151	3.40	.70	1.58	4.84	--
Physical Fitness	566	245.09	32.42	124.00	300.00	--
Commitment & Fit	571	4.05	.59	1.69	5.00	--
Retention Cognitions	571	2.80	.59	1.00	3.83	--
Knowledge & Skill[a]	458	.05	.87	-3.09	2.14	--
Training Restarts (Y/N)	2,622	.22	.41	.00	1.00	--
Disciplinary Incidents (Y/N)	538	.23	.42	.00	1.00	--
Army Life Adjustment	634	4.12	.67	1.22	5.00	--
Tier 1 + Tier 2 (Combined)						
IMT Composites						
Overall Performance	4,551	3.31	.78	1.00	5.00	--
Physical Fitness	15,145	252.00	30.75	109.00	300.00	--
Commitment & Fit	15,294	3.99	.58	1.13	5.00	.95
Retention Cognitions	15,294	2.72	.58	1.00	4.33	.89
Knowledge & Skill [a]	12,353	.05	.85	-3.83	2.27	.82
Training Restarts (Y/N)	71,660	.18	.39	.00	1.00	--
Disciplinary Incidents (Y/N)	13,706	.21	.41	.00	1.00	--
Army Life Adjustment	16,835	4.09	.66	1.00	5.00	.87
In-Unit Composites						
Overall PRS	674	5.22	1.13	2.02	7.00	--
Physical Fitness	939	246.53	31.71	120.00	300.00	--
Commitment & Fit	960	3.62	.66	1.51	5.00	.94
Retention Cognitions	959	2.47	.65	1.00	3.83	.86
Knowledge & Skill [a]	951	.06	.90	-3.64	2.29	.75
Leadership Potential	660	4.87	1.66	1.00	7.00	--
Disciplinary Incidents (Y/N)	960	.22	.41	.00	1.00	--

[a] Knowledge & Skill is reported on a standardized *z*-score metric.
[b] Sample size for Tier 2 in-unit composites were all less than 50 so no results are reported.

Summary

Criterion data, such as attrition, training restarts, and AIT course grades, were gathered from administrative records. In addition, three types of criterion measures were adapted from previous Army research to validate the TAPAS and ICTL: (a) the JKTs, (b) the PRS, and (c) the ALQ. The JKTs measure WTBD (Army-wide) and (for eight target MOS) MOS-specific knowledge. These were combined with administrative records of AIT grades to form a Knowledge/Skill composite, intended to measure a Soldier's task-specific knowledge. The PRS are completed by training cadre (IMT) or supervisors (in-unit) and measure Army-wide constructs such as effort and leadership and (for selected IMT MOS) MOS-specific competence. The PRS were combined to form an Overall Performance composite intended to measure cadre and/or supervisor ratings of a Soldier's general performance level. Third, the ALQ asks Soldiers to complete verifiable self-report performance items (e.g., their APFT scores) and self-report attitudinal items (e.g., adjustment to Army life). For the validation analyses, the ALQ scales were combined to form a Commitment and Fit composite and a Retention Cognitions composite. Several other scales were left as standalone criteria.

In general, the criterion measures described in this chapter exhibited acceptable and theoretically consistent psychometric properties. The exception to this was the Army-wide and MOS-specific PRS, which continued to exhibit low interrater reliability coefficients. Results involving the PRS should be interpreted with caution.

CHAPTER 5: EVIDENCE FOR THE PREDICTIVE VALIDITY OF THE TAPAS

Joseph Caramagno (HumRRO)

This chapter evaluates the potential of the TAPAS to predict Soldiers' performance and retention through their first unit of assignment. We begin with a brief description of our analytic approach. Next, we summarize the main findings from (a) incremental validity analyses involving the existing operational and newly developed TOPS composites (Can-Do, Will-Do, Adaptation) and a set of optimally weighted scores on nine TAPAS dimensions that are common across the TAPAS versions; and (b) bivariate correlations between the TAPAS scales and selected performance and retention criteria.

Analysis Approach

To evaluate the TAPAS' potential to enhance new Soldier selection, we examined the incremental validity of the TAPAS over the AFQT in predicting first-term outcomes important to the Army. Consistent with the Army's personnel goals, we examined performance and retention-related outcomes that, as a group, provide representative coverage of the criterion space (Campbell, Hanson, & Oppler, 2001; Campbell, McHenry, & Wise, 1990; Knapp & Tremble, 2007; Strickland, 2005). In this sixth analysis cycle, we included newly developed criterion composites as well as a select number of stand-alone criteria to reduce the criterion space while also accounting for overlap among the outcome measures.

Our analysis approach was generally consistent with previous evaluations of the TAPAS and similar experimental non-cognitive predictors (e.g., Ingerick et al., 2009; Knapp & Heffner, 2009; 2010; Trippe, Caramagno, Allen, & Ingerick, 2011). In brief, this approach involved testing a series of two-step hierarchical regression models, where scores on each criterion measure or composite were regressed onto Soldiers' AFQT scores in the first step, followed by scores on the TOPS composites or TAPAS scales in the second step. The resulting increment in the multiple correlation (ΔR) from adding the TAPAS in the second step served as the index of incremental validity.

For the continuously scaled criteria, the models were estimated using Ordinary Least Squares (OLS) regression. Logistic regression was used for the dichotomous criteria (i.e., attrition, disciplinary incidents, training restart). For the logistic regression models, we estimated point-biserial correlations (r_{pb}) in place of the traditional pseudo-R estimates. These point-biserial correlations reflected the correlation between a Soldier's predicted probability of exhibiting a selected behavior and his or her actual behavior (e.g., attriting). We estimated these correlations because of the well-known conceptual and statistical issues associated with traditional pseudo-R estimates (Cohen, Cohen, West, & Aiken, 2003).

A series of six regression models were estimated for each criterion measure (where k = the number of predictors in the model): (a) a model consisting of TAPAS scales common across the TOPS composites (k = 9), (b) the original (current operational) TOPS Can-Do composite (k = 1),

(c) the operational TOPS Will-Do composite (k = 1), (d) the revised TOPS Can-Do composite (k = 1), (e) the revised TOPS Will-Do composite (k = 1), and (f) the new TOPS Adaptation composite (k = 1). Estimates for the first model, the model consisting of all TAPAS scales, represent the best-case scenario of the TAPAS predictive potential, whereas estimates for the TOPS composite models capture the predictive potential of the composites as configured for operational usage. Table 5.1 provides a summary of each of the regression models. All models were estimated separately by education tier, in addition to Tiers 1 and 2 combined where sample size allowed.

Table 5.1. ***Summary of the Regression Models***

Model Name	# of Predictors (k)	Description
Common TAPAS Scales	9	Model consists of a set of optimally weighted scores on 9 TAPAS dimensions (or facets) that are common across all TOPS composites.
Original TOPS Can-Do Composite	1	Model consists of scores on the existing TOPS Can-Do composite.
Original TOPS Will-Do Composite	1	Model consists of scores on the existing TOPS Will-Do composite.
Revised TOPS Can-Do Composite	1	Model consists of scores on the revised TOPS Can-Do composite.
Revised TOPS Will-Do Composite	1	Model consists of scores on the revised TOPS Will-Do composite.
New TOPS Adaptation Composite	1	Model consists of scores on the newly created TOPS Adaptation composite.

To enable comparisons across the different models and education tier levels, we adjusted the observed R and ΔR for shrinkage. Comparing the aforementioned models directly, without the shrinkage adjustments, could have led to incorrect conclusions. The reason for this is because the observed R becomes inflated as more predictors are entered in the model, regardless of the "true" relationship between the predictors and the criterion. This over inflation can be particularly problematic when the sample size is small, as is the case with several of the Tier 2 predictor-criterion relationships. Adjusting the estimates for shrinkage enables a direct comparison across models for the same criterion or by education tier. We adjusted the observed R and ΔR estimates using Burket's (1964) formula for shrinkage (cf. Formula 8; Schmitt & Ployhart, 1999). This adjustment was implemented as follows:

1. Using the observed (unadjusted) correlations among the TAPAS, AFQT, or education tier and the selected criterion previously estimated, correlations between the predictors and the performance-related criteria (e.g., JKT) were adjusted for sample size and number of predictors using Burket's (1964) formula for shrinkage:

$$\rho_c = (NR^2 - k)/[R(N - k)] \quad (1)$$

where k equals the number of elements in the model.

2. The shrinkage-adjusted incremental validity estimates for the experimental predictors were calculated by subtracting the adjusted *R* associated with the AFQT-only model from the adjusted *R* obtained from the full model (i.e., the AFQT + Experimental Predictor model).

In addition to the incremental validity analyses, we examined the predictive validity of the individual TAPAS scales based on the bivariate correlations between scores on the TAPAS scales and the selected criterion measures. The results of these analyses are presented in Appendix D.

Findings

Findings using the new criterion composites and select single measure predictors are organized by criterion domain: (a) IMT performance, (b) in-unit performance, and (c) attrition (data captured quarterly). A few notes related to interpretation of the findings:

- The interrater reliability estimates for the PRS were generally low. Therefore, the predictive validity evidence associated with the PRS (e.g., Overall Performance) should be interpreted with caution.

- The results for Tier 2 Soldiers should be interpreted with caution at this stage of the TOPS evaluation because of limited criterion data for those Soldiers. Accordingly, our discussion primarily focuses on the shrinkage adjusted results for Tier 1 and 2 Soldiers (combined).[9]

- The shrinkage adjusted results presented in this report should not be directly compared to previously reported results that were not adjusted for shrinkage.

- Most of our discussion focuses on the models involving the TOPS composites because these models best evaluate the TAPAS' current operational format as well as its potential future format. However, it should be noted that models based on an optimally weighted composite of nine common TAPAS dimensions yielded incremental validity estimates that were comparable to or higher than the reduced models, on average, after adjusting the estimates for shrinkage.

[9] Results for Tier 1 and Tier 2 applicants combined were generally comparable to Tier 1 only results.

Predicting IMT Performance

Tables 5.2 to 5.4 summarize the incremental validity results for predicting IMT performance criteria over and above the AFQT. Consistent with expectations and previous analyses, the TOPS composites (Can-Do and Will-Do; original and revised) and common TAPAS scales evidenced no notable increments over the AFQT in predicting scores on the composite measure of technical knowledge and skill (Adj. ΔR were consistently less than .01). In contrast, the common TAPAS scales and the TOPS composites exhibited small to moderate gains in predictive validity over the AFQT in predicting outcomes on several important nontechnical performance criteria. For example, the common TAPAS scales and the revised Will-Do composite demonstrated modest potential to enhance the prediction of Physical Fitness (Adj. ΔR = .21 and .18, respectively), Army Life Adjustment (Adj. ΔR = .15 and .14, respectively), Commitment and Fit (Adj. ΔR = .13 and .12, respectively), and Disciplinary Incidents (Adj. ΔR = .12 and .11, respectively). The original Can-Do composite also exhibited small gains over the AFQT in predicting Soldiers' attitudes towards the Army (Commitment and Fit, Adj. ΔR = .09; Army Life Adjustment, Adj. ΔR = .08).

None of the original or revised TOPS composites contributed substantially to the prediction of cadre ratings of overall performance (Adj. ΔR ranged from .00 to .06), Soldiers' retention cognitions (Adj. ΔR ranged from .00 to .02), or the incidence of recycling at least once during training (Adj. ΔR ranged from .00 to .04). The largest increment over the AFQT in predicting these criteria was observed for the model containing the common TAPAS dimensions (Adj. ΔR ranged from .04 to .06).

Table 5.2. ***Incremental Validity Estimates for the TAPAS over AFQT for Predicting IMT Technical Performance and Discipline-related Criteria by Education Tier***

IMT Criterion Measure / Model	Tier 1				Tier 2				Tier 1 + 2 (Combined)			
	AFQT *R*	AFQT + TAPAS *R*	Δ*R*	Adj Δ*R*	AFQT *R*	AFQT + TAPAS *R*	Δ*R*	Adj Δ*R*	AFQT *R*	AFQT + TAPAS *R*	Δ*R*	Adj Δ*R*
Knowledge & Skill	*n = 10,267 – 11,895*				*n = 340 - 458*				*n = 10607 – 12,353*			
Common TAPAS Scales (9)	**.46**	**.46**	**.00**	.00	**.30**	.32	**.02**	.00	**.46**	**.46**	**.00**	.00
Original Can-Do	**.46**	**.46**	**.00**	.00	**.30**	.30	**.00**	.00	**.46**	**.46**	**.00**	.00
Original Will-Do	**.46**	.46	**.00**	.00	**.30**	.30	**.00**	.00	**.46**	.46	**.00**	.00
Revised Can-Do	**.46**	**.46**	**.00**	.00	**.30**	.30	**.00**	.00	**.46**	**.46**	**.00**	.00
Revised Will-Do	**.46**	.46	**.00**	.00	**.30**	.31	**.00**	.00	**.46**	.46	**.00**	.00
New Adaptation[a]	**.46**	.46	**.00**	.00	**.30**	.31	**.01**	.00	**.46**	.46	**.00**	.00
Disciplinary Incidents	*n = 7,228 – 8,167*				*n = 209 - 281*				*n = 7,437 – 8,448*			
Common TAPAS Scales (9)	**.02**	**.15**	**.12**	.12	.04	**.17**	.14	.00	**.02**	**.14**	**.12**	.12
Original Can-Do	**.03**	**.08**	**.05**	.06	.09	.09	.00	.00	**.03**	**.08**	**.05**	.05
Original Will-Do	**.02**	**.11**	**.08**	.09	.04	.09	.05	.01	**.02**	**.11**	**.08**	.08
Revised Can-Do	**.03**	**.04**	**.01**	.01	.09	.11	.02	.00	**.03**	**.04**	**.01**	.01
Revised Will-Do	**.02**	**.14**	**.11**	.12	.04	.12	.08	.05	**.02**	**.14**	**.11**	.11
New Adaptation [a]	**.03**	**.10**	**.07**	.07	.09	.09	.00	.00	**.03**	**.10**	**.07**	.07
Training Restart	*n = 37,676 – 39,269*				*n = 1,004 – 1,101*				*n = 38,680 – 40,370*			
Common TAPAS Scales (9)	**.02**	**.06**	**.04**	.04	.01	**.09**	.08	.00	**.02**	**.06**	**.04**	.04
Original Can-Do	**.02**	**.02**	**.00**	.00	.01	.01	.00	.00	**.02**	**.02**	**.00**	.00
Original Will-Do	**.02**	**.03**	**.01**	.01	.01	.02	.01	.00	**.02**	**.03**	**.01**	.01
Revised Can-Do	**.02**	**.02**	**.00**	.00	.01	.04	.03	.00	**.02**	**.02**	**.00**	.00
Revised Will-Do	**.02**	**.05**	**.03**	.03	.01	.01	.00	.00	**.02**	**.05**	**.03**	.03
New Adaptation [a]	**.02**	**.04**	**.02**	.03	.01	.01	.00	.00	**.02**	**.04**	**.02**	.02

Note. The number in parentheses after the model title refers to the number of TAPAS-related scores in the model and excludes AFQT.. AFQT + TAPAS = Multiple correlation (*R*) between the AFQT + selected TAPAS/TOPS composite scales with the targeted criterion measure. Δ*R* = Increment in *R* from adding the selected TAPAS/TOPS composite scales over AFQT to the regression model ([AFQT + TAPAS] – AFQT Only). Estimates in bold were statistically significant, $p < .05$ (one-tailed). Note that significance tests cannot be applied to the adjusted Δ*R*.

[a] Because the Adaptation composite is based on a subset of the data, these results may underestimate its incremental validity.

Table 5.3. ***Incremental Validity Estimates for the TAPAS over AFQT for Predicting IMT Adjustment, Commitment and Fit, and Retention Criteria by Education Tier***

IMT Criterion Measure / Model	Tier 1				Tier 2				Tier 1 + 2 (Combined)			
	AFQT *R*	AFQT + TAPAS *R*	Δ*R*	Adj Δ*R*	AFQT *R*	AFQT + TAPAS *R*	Δ*R*	Adj Δ*R*	AFQT *R*	AFQT + TAPAS *R*	Δ*R*	Adj Δ*R*
Army Life Adjustment	*n = 12,717 – 14,723*				*n = 424 - 571*				*n = 13,141 – 15,294*			
Common TAPAS Scales (9)	**.07**	**.22**	**.15**	.15	.01	**.19**	**.18**	.11	**.07**	**.22**	**.15**	.15
Original Can-Do	**.07**	**.15**	**.08**	.08	.01	**.12**	**.11**	.08	**.07**	**.15**	**.08**	.08
Original Will-Do	**.07**	**.12**	**.05**	.05	.01	**.09**	.08	.05	**.07**	**.12**	**.05**	.05
Revised Can-Do	**.07**	**.10**	**.03**	.03	.01	.03	.01	.00	**.07**	**.09**	**.03**	.03
Revised Will-Do	**.07**	**.20**	**.14**	.14	.01	**.18**	**.17**	.16	**.07**	**.20**	**.14**	.14
New Adaptation [a]	**.07**	**.11**	**.04**	.04	.01	.07	.05	.00	**.07**	**.11**	**.05**	.04
Commitment & Fit	*n = 12,717 – 14,723*				*n = 424 - 571*				*n = 13,141 – 15,294*			
Common TAPAS Scales (9)	.01	**.14**	**.13**	.13	.02	.17	.15	.07	.01	**.14**	**.13**	.13
Original Can-Do	.01	**.09**	**.08**	.09	.02	.09	.07	.04	.01	**.09**	**.08**	.09
Original Will-Do	.01	**.08**	**.07**	.08	.02	.06	.04	.01	.01	**.08**	**.07**	.08
Revised Can-Do	.01	**.02**	**.02**	.02	.02	.05	.02	.00	.01	**.02**	**.02**	.02
Revised Will-Do	.01	**.11**	**.11**	.12	.02	**.14**	**.12**	.11	.01	**.11**	**.11**	.12
New Adaptation [a]	.01	**.04**	**.03**	.04	.02	.03	.01	.00	.01	**.04**	**.03**	.04
Retention Cognitions	*n = 12,717 – 14,723*				*n = 424 - 571*				*n = 13,141 – 15,294*			
Common TAPAS Scales (9)	**.11**	**.16**	**.04**	.04	**.14**	.20	**.05**	.00	**.11**	**.16**	**.04**	.04
Original Can-Do	**.11**	**.14**	**.02**	.02	**.14**	.15	**.00**	.00	**.11**	**.14**	**.02**	.02
Original Will-Do	**.11**	**.13**	**.01**	.01	**.14**	.14	**.00**	.00	**.11**	**.13**	**.01**	.01
Revised Can-Do	**.11**	**.12**	**.01**	.01	**.14**	.14	**.00**	.00	**.11**	**.12**	**.01**	.01
Revised Will-Do	**.11**	**.12**	**.00**	.00	**.14**	.16	**.02**	.01	**.11**	**.12**	**.00**	.00
New Adaptation [a]	**.11**	.12	**.00**	.00	**.14**	.15	**.00**	.00	**.11**	.12	**.00**	.00

Note. The number in parentheses after the model title refers to the number of TAPAS-related scores in the model and excludes AFQT.. AFQT + TAPAS = Multiple correlation (*R*) between the AFQT + selected TAPAS/TOPS composite scales with the targeted criterion measure. Δ*R* = Increment in *R* from adding the selected TAPAS/TOPS composite scales over AFQT to the regression model ([AFQT + TAPAS] – AFQT Only). Estimates in bold were statistically significant, $p < .05$ (one-tailed). Note that significance tests cannot be applied to the adjusted Δ*R*.

[a] Because the Adaptation composite is based on a subset of the data, these results may underestimate its incremental validity.

Table 5.4. ***Incremental Validity Estimates for the TAPAS over AFQT for Predicting IMT Physical Fitness and Overall Performance Criteria by Education Tier***

IMT Criterion Measure / Model	Tier 1				Tier 2				Tier 1 + 2 (Combined)			
	AFQT *R*	AFQT + TAPAS *R*	Δ*R*	Adj Δ*R*	AFQT *R*	AFQT + TAPAS *R*	Δ*R*	Adj Δ*R*	AFQT *R*	AFQT + TAPAS *R*	Δ*R*	Adj Δ*R*
Physical Fitness	*n = 12,588 – 14,579*				*n = 420 - 566*				*n = 13,008 – 15,145*			
Common TAPAS Scales (9)	**.09**	**.30**	**.21**	.21	.06	**.29**	**.23**	.21	**.09**	**.30**	**.22**	.21
Original Can-Do	**.09**	.09	**.00**	.00	.06	.10	.04	.03	**.09**	.09	**.00**	.00
Original Will-Do	**.09**	**.12**	**.03**	.03	.06	**.12**	**.06**	.06	**.09**	**.12**	**.03**	.03
Revised Can-Do	**.09**	**.10**	**.01**	.01	.06	.06	.00	.00	**.09**	**.10**	**.01**	.01
Revised Will-Do	**.09**	**.27**	**.18**	.18	.06	**.28**	**.22**	.24	**.09**	**.27**	**.18**	.18
New Adaptation [a]	**.09**	**.18**	**.09**	.09	.06	**.15**	**.09**	.10	**.09**	**.18**	**.09**	.09
Overall Performance	*n = 3,892 – 4,400*				*n = 105 - 151*				*n = 3,997 – 4,551*			
Common TAPAS Scales (9)	**.08**	**.15**	**.07**	.06	.03	.23	.21	.00	**.08**	**.15**	**.07**	.06
Original Can-Do	**.08**	.08	**.00**	.00	.03	.03	.00	.00	**.08**	.08	**.00**	.00
Original Will-Do	**.08**	**.10**	**.02**	.02	.03	.04	.01	.00	**.08**	**.10**	**.02**	.02
Revised Can-Do	**.08**	.08	**.00**	.00	.03	.03	.00	.00	**.08**	.08	**.00**	.00
Revised Will-Do	**.08**	**.13**	**.05**	.05	.03	.15	.12	.06	**.08**	**.13**	**.05**	.05
New Adaptation [a]	**.08**	**.10**	**.02**	.02	.03	.04	.01	.00	**.08**	**.10**	**.02**	.02

Note. The number in parentheses after the model title refers to the number of TAPAS-related scores in the model and excludes AFQT. AFQT + TAPAS = Multiple correlation (*R*) between the AFQT + selected TAPAS/TOPS composite scales with the targeted criterion measure. Δ*R* = Increment in *R* from adding the selected TAPAS/TOPS composite scales over AFQT to the regression model ([AFQT + TAPAS] – AFQT Only). Estimates in bold were statistically significant, $p < .05$ (one-tailed). Note that significance tests cannot be applied to the adjusted Δ*R*.

[a] Because the Adaptation composite is based on a subset of the data, these results may underestimate its incremental validity.

Predicting In-Unit Performance

The incremental validity results for predicting in-unit performance are presented in Tables 5.5 – 5.7. Separate analyses were not conducted for Tier 2 Soldiers because those Soldiers had limited in-unit criterion data ($n < 50$). As before, our discussion focuses on the shrinkage adjusted results for Tier 1 and 2 Soldiers combined. None of the predictor measures demonstrated potential to increment the AFQT in the prediction of in-unit technical performance (incremental validity estimates associated with scores on the Knowledge and Skill measure were at or near zero for all models). The TAPAS scales and TOPS composites provided limited additional information beyond the AFQT in the prediction of three nontechnical criteria as well (Overall Performance Adj. $\Delta R \leq .04$, Leadership Potential Adj. $\Delta R \leq .04$, Retention Cognitions Adj. $\Delta R \leq .03$).

The largest gains in predictive validity were observed for models involving Physical Fitness (self-reported APFT scores). The inclusion of the common TAPAS scales (Adj. $\Delta R = .25$), revised Will-Do composite (Adj. $\Delta R = .21$), and Adaptation composite (Adj. $\Delta R = .13$) in the model contributed a modest amount of additional, non-trivial information (beyond that of the AFQT only). In addition, the adjusted estimate of ΔR for the revised Will-Do composite was three times that of the original Will-Do composite (Adj. $\Delta R = .07$) for this criterion. The TAPAS scales and TOPS composites significantly incremented the AFQT in the prediction of disciplinary incidents as well, but the change in R was smaller (original Will-Do composite Adj. $\Delta R = 09$; revised Will-Do composite Adj. $\Delta R = .07$; common TAPAS scales Adj. $\Delta R = .07$; original Can-Do composite Adj. $\Delta R = .06$). Finally, it should be noted that the original Can-Do composite demonstrated the greatest potential (compared to other TOPS composites) to increment the AFQT in the prediction of Commitment and Fit (Adj. $\Delta R = .08$); however, the magnitude of the estimate is relatively small.

Predicting Attrition

Results of the evaluation of the TAPAS' potential to increment the prediction of first-term Soldier attrition over and above the AFQT are displayed in Table 5.8. Results are displayed for 6-, 12-, 24-, and 30-month attrition. Although all of the estimates are statistically significant, none of the predictor measures exhibited remarkable gains in incremental validity beyond the AFQT (Adj. ΔR ranged from .00 to .04). This was true for the adjusted and unadjusted estimates of the ΔR.

Table 5.5. ***Incremental Validity Estimates for the TAPAS over AFQT for Predicting In-Unit Technical Performance and Disciplineby Education Tier***

In-Unit Criterion Measure / Model	Tier 1				Tier 1 + 2 (Combined)			
	AFQT *R*	AFQT + TAPAS *R*	Δ*R*	Adj Δ*R*	AFQT *R*	AFQT + TAPAS *R*	Δ*R*	Adj Δ*R*
Knowledge & Skill	*n = 921 - 936*				*n = 935 - 951*			
Common TAPAS Scales (9)	**.47**	**.49**	**.02**	.01	**.48**	**.50**	**.02**	.01
Original Can-Do	**.47**	**.48**	**.01**	.01	**.48**	**.48**	**.01**	.01
Original Will-Do	**.47**	**.48**	**.00**	.00	**.48**	**.48**	**.00**	.00
Revised Can-Do	**.47**	**.48**	**.01**	.01	**.48**	**.49**	**.01**	.01
Revised Will-Do	**.47**	.47	**.00**	.00	**.48**	.48	**.00**	.00
New Adaptation [a]	**.47**	.47	**.00**	.00	**.48**	.48	**.00**	.00
Disciplinary Incidents	*n = 925 - 940*				*n = 940 - 956*			
Common TAPAS Scales (9)	.02	**.13**	.11	.06	.01	**.13**	**.13**	.07
Original Can-Do	.01	**.08**	**.07**	.06	.00	**.08**	**.08**	.06
Original Will-Do	.02	**.11**	**.09**	.09	.01	**.11**	**.10**	.09
Revised Can-Do	.01	.03	.02	.00	.00	.04	.03	.00
Revised Will-Do	.02	**.08**	.06	.05	.01	**.09**	**.08**	.07
New Adaptation [a]	.01	.04	.02	.00	.00	.04	.04	.00

Note. The number in parentheses after the model title refers to the number of TAPAS-related scores in the model and excludes AFQT. AFQT + TAPAS = Multiple correlation (*R*) between the AFQT + selected TAPAS/TOPS composite scales with the targeted criterion measure. Δ*R* = Increment in *R* from adding the selected TAPAS/TOPS composite scales over AFQT to the regression model ([AFQT + TAPAS] – AFQT Only). Estimates in bold were statistically significant, $p < .05$ (one-tailed). Note that significance tests cannot be applied to the adjusted Δ*R*.

[a] Because the Adaptation composite is based on a subset of the data, these results may underestimate its incremental validity.

Table 5.6. ***Incremental Validity Estimates for the TAPAS over AFQT for Predicting In-Unit Overall Leadership Potential, Commitment and Fit, and Retention Criteria by Education Tier***

In-Unit Criterion Measure / Model	Tier 1				Tier 1 + 2 (Combined)			
	AFQT *R*	AFQT + TAPAS *R*	Δ*R*	Adj Δ*R*	AFQT *R*	AFQT + TAPAS *R*	Δ*R*	Adj Δ*R*
Leadership Potential	*n = 640 - 650*				*n = 650 - 660*			
Common TAPAS Scales (9)	.07	.16	.09	.02	.07	.16	.09	.02
Original Can-Do	.07	.07	.00	.00	.07	.07	.00	.00
Original Will-Do	.07	**.11**	**.04**	.03	.07	**.11**	**.04**	.04
Revised Can-Do	.07	.08	.01	.00	.07	.08	.01	.00
Revised Will-Do	.07	**.11**	**.04**	.03	.07	**.11**	**.04**	.03
New Adaptation [a]	.07	.10	**.03**	.02	.07	.09	.03	.02
Commitment & Fit	*n = 929 - 944*				*n = 944 – 960*			
Common TAPAS Scales (9)	.03	.11	.08	.02	.04	.12	.08	.02
Original Can-Do	.03	**.11**	**.08**	.09	.04	**.11**	**.07**	.08
Original Will-Do	.03	**.08**	.04	.05	.04	**.08**	.04	.04
Revised Can-Do	.03	.05	.02	.01	.04	.06	.02	.01
Revised Will-Do	.03	**.08**	.04	.05	.04	**.08**	**.04**	.05
New Adaptation [a]	.03	.04	.00	.00	.04	.04	.01	.00
Retention Cognitions	*n = 928 - 943*				*n = 943 - 959*			
Common TAPAS Scales (9)	**.13**	**.19**	**.06**	.01	**.12**	**.18**	**.06**	.01
Original Can-Do	**.13**	**.15**	**.02**	.02	**.12**	**.15**	**.03**	.02
Original Will-Do	**.13**	**.17**	**.04**	.03	**.12**	**.16**	**.04**	.03
Revised Can-Do	**.13**	.13	**.00**	.00	**.12**	.13	**.00**	.00
Revised Will-Do	**.13**	.14	**.01**	.00	**.12**	.14	**.01**	.01
New Adaptation [a]	**.13**	.13	**.00**	.00	**.12**	.12	**.00**	.00

Note. The number in parentheses after the model title refers to the number of TAPAS-related scores in the model and excludes AFQT. AFQT + TAPAS = Multiple correlation (*R*) between the AFQT + selected TAPAS/TOPS composite scales with the targeted criterion measure. Δ*R* = Increment in *R* from adding the selected TAPAS/TOPS composite scales over AFQT to the regression model ([AFQT + TAPAS] – AFQT Only). Estimates in bold were statistically significant, $p < .05$ (one-tailed). Note that significance tests cannot be applied to the adjusted Δ*R*.

[a] Because the Adaptation composite is based on a subset of the data, these results may underestimate its incremental validity.

Table 5.7. ***Incremental Validity Estimates for the TAPAS over AFQT for Predicting In-Unit Physical Fitness and Overall Performance Criteria by Education Tier***

In-Unit Criterion Measure / Model	Tier 1				Tier 1 + 2 (Combined)			
	AFQT *R*	AFQT + TAPAS *R*	Δ*R*	Adj Δ*R*	AFQT *R*	AFQT + TAPAS *R*	Δ*R*	Adj Δ*R*
Physical Fitness	*n = 908 - 923*				*n = 923 - 939*			
Common TAPAS Scales (9)	.02	**.28**	**.26**	.25	.03	**.29**	**.26**	.25
Original Can-Do	.02	.03	.01	.00	.03	.03	.00	.00
Original Will-Do	.02	**.09**	**.07**	.07	.03	**.10**	**.07**	.07
Revised Can-Do	.02	.04	.02	.00	.03	.04	.01	.00
Revised Will-Do	.02	**.21**	**.19**	.20	.03	**.22**	**.19**	.21
New Adaptation [a]	.02	**.14**	**.12**	.13	.03	**.15**	**.12**	.13
Overall Performance	*n = 654 - 664*				*n = 664 - 674*			
Common TAPAS Scales (9)	**.11**	.18	**.07**	.00	**.10**	.18	**.08**	.01
Original Can-Do	**.11**	.12	**.00**	.00	**.10**	.10	**.00**	.00
Original Will-Do	**.11**	**.15**	**.03**	.03	**.10**	**.14**	**.04**	.03
Revised Can-Do	**.11**	.12	**.00**	.00	**.10**	.10	**.00**	.00
Revised Will-Do	**.11**	**.15**	**.04**	.04	**.10**	**.15**	**.05**	.04
New Adaptation [a]	**.11**	.12	**.01**	.00	**.10**	.11	**.01**	.00

Note. The number in parentheses after the model title refers to the number of TAPAS-related scores in the model and excludes AFQT. AFQT + TAPAS = Multiple correlation (*R*) between the AFQT + selected TAPAS/TOPS composite scales with the targeted criterion measure. Δ*R* = Increment in *R* from adding the selected TAPAS/TOPS composite scales over AFQT to the regression model ([AFQT + TAPAS] – AFQT Only). Estimates in bold were statistically significant, $p < .05$ (one-tailed). Note that significance tests cannot be applied to the adjusted Δ*R*.

[a] Because the Adaptation composite is based on a subset of the data, these results may underestimate its incremental validity.

Table 5.8. ***Incremental Validity Estimates for the TAPAS over AFQT for Predicting Cumulative Attrition through 30 Months of Service by Education Tier***

Attrition / Model	Tier 1				Tier 2				Tier 1 + 2			
	AFQT *R*	AFQT + TAPAS *R*	Δ*R*	Adj Δ*R*	AFQT *R*	AFQT + TAPAS *R*	Δ*R*	Adj Δ*R*	AFQT *R*	AFQT + TAPAS *R*	Δ*R*	Adj Δ*R*
6-Month	*n = 54,699 – 57,903*				*n = 1,564 – 1,768*				*n = 56,263 – 59,671*			
Common TAPAS Scales (9)	**.06**	**.10**	**.04**	.04	.02	**.08**	.06	.01	**.06**	**.09**	**.04**	.04
Original Can-Do	**.06**	**.06**	**.00**	.00	.00	.01	.01	.00	**.06**	**.06**	**.00**	.00
Original Will-Do	**.06**	**.06**	**.00**	.00	.02	.02	.00	.00	**.06**	**.06**	**.00**	.00
Revised Can-Do	**.06**	**.06**	**.00**	.00	.00	.01	.01	.00	**.06**	**.06**	**.00**	.00
Revised Will-Do	**.06**	**.08**	**.02**	.02	.02	.03	.01	.00	**.06**	**.08**	**.02**	.02
New Adaptation [a]	**.06**	**.08**	**.02**	.02	.00	.01	.01	.00	**.06**	**.08**	**.02**	.02
12-Month	*n = 41,512 – 41,672*				*n = 778 - 783*				*n = 42,290 – 42,455*			
Common TAPAS Scales (9)	**.06**	**.10**	**.05**	.04	.06	**.11**	.05	.00	**.06**	**.10**	**.05**	.04
Original Can-Do	**.06**	**.06**	**.00**	.00	.05	.06	.00	.00	**.06**	**.06**	**.00**	.00
Original Will-Do	**.06**	**.06**	**.01**	.00	.06	.06	.00	.00	**.06**	**.06**	**.00**	.00
Revised Can-Do	**.06**	**.06**	**.00**	.00	.05	.06	.00	.00	**.06**	**.06**	**.00**	.00
Revised Will-Do	**.06**	**.09**	**.03**	.03	.06	**.07**	.01	.00	**.06**	**.09**	**.03**	.03
New Adaptation [a]	**.06**	**.09**	**.03**	.03	.05	.05	.00	.00	**.06**	**.09**	**.03**	.03
24-Month	*n = 15,332 – 15,385*				*n = 73 - 77*				*n = 15,405 – 15,462*			
Common TAPAS Scales (9)	**.10**	**.14**	**.03**	.03	.18	**.48**	.30	.16	**.10**	**.14**	**.03**	.03
Original Can-Do	**.10**	**.11**	**.00**	.00	.14	.14	.00	.00	**.10**	**.10**	**.00**	.00
Original Will-Do	**.10**	**.11**	**.01**	.01	.19	**.28**	.09	.07	**.10**	**.11**	**.01**	.01
Revised Can-Do	**.10**	**.10**	**.00**	.00	.14	.18	.05	.00	**.10**	**.10**	**.00**	.00
Revised Will-Do	**.10**	**.13**	**.02**	.02	.19	**.28**	**.09**	.07	**.10**	**.12**	**.02**	.02
New Adaptation [a]	**.10**	**.13**	**.03**	.03	.14	**.29**	**.15**	.16	**.10**	**.13**	**.03**	.03
30-Month	*n = 4,454 – 4,502*				*n = 68 - 72*				*n = 4,522 – 4,574*			
Common TAPAS Scales (9)	**.21**	**.24**	**.03**	.03	**.24**	**.48**	.24	.07	**.21**	**.24**	**.03**	.02
Original Can-Do	**.21**	**.21**	**.00**	.00	.20	.20	.00	.00	**.21**	**.21**	**.00**	.00
Original Will-Do	**.21**	**.21**	**.00**	.00	**.25**	**.31**	**.06**	.03	**.21**	**.21**	**.00**	.00
Revised Can-Do	**.21**	**.21**	**.00**	.00	.20	.22	.02	.00	**.21**	**.21**	**.00**	.00
Revised Will-Do	**.21**	**.22**	**.01**	.01	**.25**	**.35**	**.10**	.08	**.21**	**.22**	**.01**	.01
New Adaptation [a]	**.21**	**.22**	**.02**	.02	.20	**.35**	**.15**	.14	**.21**	**.22**	**.01**	.01

Note. The number in parentheses after the model title refers to the number of TAPAS-related scores in the model and excludes AFQT. AFQT + TAPAS = Multiple correlation (*R*) between the AFQT + selected TAPAS/TOPS composite scales with the targeted criterion measure. Δ*R* = Increment in *R* from adding the selected TAPAS scores over AFQT to the regression model ([AFQT + TAPAS]—AFQT Only). Adj ΔR= the ΔR after adjusting for shrinkage. Estimates in bold were statistically significant, $p < .05$ (one-tailed). Note that significance tests cannot be applied to the adjusted Δ*R*.

[a] Because the Adaptation composite is based on a subset of the data, these results may underestimate its incremental validity.

Summary

This chapter summarized results from the sixth cycle of the evaluation of criterion-related validity in the TOPS IOT&E. Overall the existing and new TOPS composites demonstrated modest incremental validity over the AFQT in predicting first-term Soldier performance and retention. Incremental validity estimates (adjusted for shrinkage) were consistently .04 or less, on average, for the original and revised Can-Do and Will-Do composites over the AFQT used alone. In contrast, the revised Will-Do composite was associated with the greatest incremental validity gains, on average, compared to other TOPS composites. This was especially true for the prediction of physical fitness, adjustment to Army life, commitment and fit, and discipline. None of the TOPS composites demonstrated utility in incrementing the AFQT in the prediction of attrition up to 30 months in service.

CHAPTER 6: INFORMATION/COMMUNICATIONs Technology LITERACY TEST EVALUATION

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Background on Development and Validation of the ICTL Test

One of the Department of Defense (DoD) ASVAB review panel's recommendations stated that "*research should be conducted to develop and evaluate a test of information and communications technology literacy (ICTL). The efficacy of coaching and item familiarity, as well as the feasibility of creating multiple forms, should be examined in conjunction with test development"* (Drasgow et al., 2006, p. 26). Toward that end, the U.S. Air Force assumed responsibility as the lead organization in development of an ICTL test which could potentially be added to the ASVAB. The Air Force retained HumRRO to develop and validate the ICTL test.

Development of the ICTL test began with the creation of a taxonomy of knowledge, skills, abilities, and other characteristics (KSAOs) required for successful performance in cyber/IT occupations. The final content blueprint focused on the four broad knowledge content areas of (a) Networking and Communications, (b) Computer Operations, (c) Security and Compliance, and (d) Software Programming and Web Development. Once the content to be measured was defined, attention turned to identifying item types and measurement methods. Although several item types were considered, there were a number of constraints related to testing time and compatibility with the ASVAB platform that virtually dictated a multiple-choice format. Multiple rounds of pilot testing and item review ultimately produced two parallel 29-item operational ICTL test forms.

Initial evidence of the ICTL's predictive validity was obtained from seven Air Force technical training schools and three Navy schools. Promising results led the Air Force to develop operational cut scores to be used in a compensatory fashion with existing ASVAB composites to select airmen for enlisted cyber-related occupations.

A parallel validation effort is currently underway involving cyber-related MOS in the Army. The Army's Signal Center of Excellence requested that ARI assist in the development of a methodology to improve the trainee selection process. ARI designed a research study to validate the ICTL test in predicting trainee performance in Information Systems Operator-Analyst (25B) and Nodal Network Systems Operator-Maintainer (25N) MOS. MOS-specific IMT criterion data are being collected from Soldiers in these MOS, though sample sizes are low (especially for 25N) since data collection did not start until 2012. Initial indications are that the ICTL test is a significant predictor of training performance, academic retention, and perceptions of MOS fit. Although there is some overlap between the Signal Center validation study and the TOPS validation analyses described in this chapter, the TOPS analyses introduce additional Soldiers in MOS beyond those trained in the Signal Center. This allows the opportunity to evaluate convergent and discriminant validity, and expands the breadth of validity evidence for this relatively new assessment. [10]

[10] The ICTL test can be said to demonstrate convergent and discriminant validity if it is more predictive in occupations with a higher degree of conceptual overlap (i.e., 25B) and less predictive in MOS with a lower degree of conceptual overlap (e.g., 11B).

ICTL Validation Sample

Soldiers in the ICTL Validation Sample were administered the ICTL at MEPS from May 2011 to January 2012 as part of the original ICTL validation research conducted across multiple Services. This sample included 52,708 Service applicants, of which 14,553 were Army Regular, 6,156 were Army National Guard, and 3,278 were Army Reserve applicants. The vast majority (93%) of these applicants were linked to a TAPAS record to become part of the TOPS Applicant Sample. The ICTL Validation Sample was created by limiting the TOPS validation samples (Administrative and IMT) described in Chapter 2 to Soldiers with valid ICTL scores. We further limited the ICTL Validation Sample to the 1,758 Soldiers in five target MOS (11B, 25B, 31B, 68W, and 88M) with sample sizes greater than 50. To clean the ICTL test data, we removed individuals who responded to fewer than 25 ICTL items or who completed the assessment in less than 3 minutes. Three minutes is a rather liberal criterion used to remove only the most extreme outliers and is merely one of many data screens applied. In addition, we removed any respondents who scored at or below chance on the ICTL test and also scored above average on the AFQT. All data screens combined resulted in the removal of only 288 applicants, which is likely a reflection of the fact that the ICTL test was presented seamlessly with operational pre-enlistment assessments. Table 6.1 contains the demographic characteristics of the TOPS ICTL validation sample.

Table 6.1. ***Background and Demographic Characteristics of the TOPS ICTL Validation Sample***

Characteristic	ICTL Validation *n* = 1,758	
	n	*%*
Component		
Regular	980	55.7
ARNG	519	29.5
USAR	259	14.7
Education Tier		
Tier 1	1,661	94.5
Tier 2	97	5.5
Military Occupational Specialty		
11B/11C/11X/18X	513	29.2
25B	469	26.7
31B	283	16.1
68W	221	12.6
88M	272	15.5
AFQT Category		
I	145	8.3
II	682	38.8
IIIA	408	23.2
IIIB	450	26.5
IV	73	4.2
Gender		
Female	263	15.1
Male	1,480	79.4

Table 6.1. (Continued)

Characteristic	ICTL Validation *n* = 1,758	
	n	*%*
Race		
African American	274	15.6
American Indian	16	0.9
Asian	64	3.6
Hawaiian/Pacific Islander	10	0.6
Caucasian	1,299	73.9
Multiple	4	0.2
Declined to Answer	91	5.2
Ethnicity		
Hispanic/Latino	204	11.6
Not Hispanic	1,478	84.1
Declined to Answer	76	4.3

Table 6.2 presents ICTL test scores by MOS in the scaled reporting metric. ICTL scaled scores are an IRT-based ability estimate that has been placed on an adjusted *t*-score scale. A standard *t*-score distribution has a mean of 50 and standard deviation of 10. The ICTL reporting metric has been adjusted such that the standard distribution would be expected in the youth population (Profile of American Youth [PAY97] sample; DMDC, 2003). Table 6.2 reveals that, on average, Soldiers in the 68W MOS have the highest ICTL scores, followed by 25B, 11B, 31B and 88M. The ICTL test was designed to predict training performance in cyber related occupations like 25B, but like most cognitive assessments, reflects general mental ability to some degree.

Table 6.2. ***ICTL Scaled Scores by MOS***

MOS	*n*	Min	Max	*M*	*SD*
11B	513	30.0	80.0	52.9	8.5
25B	469	33.0	77.0	54.8	8.3
31B	283	34.0	72.0	52.3	7.3
68W	221	38.0	77.0	57.9	7.9
88M	272	31.0	73.0	51.4	8.1
Full Sample	1,758	30.0	80.0	53.7	8.3

Table 6.3 contains subgroup mean comparisons for selected groups. Gender, race, and ethnicity groups were chosen to be consistent with designations used by the ASVAB testing program (Defense Manpower Data Center, 2011). Standardized mean difference values reveal statistically significant differences between minority and majority gender, race, and ethnicity groups such that the majority outperforms the minority group in all comparisons. The mean difference between education tiers is not statistically significant. Standardized mean difference values are comparable to those observed in the original ICTL validation sample. It is important to note that ICTL subgroup differences in gender, race, and ethnicity groups are smaller than those observed for other ASVAB technical tests (Trippe & Russell, 2011).[11]

[11] ASVAB technical tests include Auto-Shop (AS), General Science (GS), Electronics Information (EI) and Mechanical Comprehension (MC).

Table 6.3. ***ICTL Scaled Scores by Subgroup***

	Minority			Majority			
Subgroup Comparison	*n*	*M*	*SD*	*n*	*M*	*SD*	*d*
Female - Male	263	51.2	6.6	1480	54.1	8.6	**0.35**
Black - White	274	50.4	7.3	1106	54.6	8.5	**0.51**
Hispanic - Non-Hispanic White	204	51.3	7.3	1106	54.6	8.5	**0.40**
Ed Tier 2 – Ed Tier 1	97	55.8	7.7	1661	53.6	8.4	-0.27

Note. d = Cohen's *d*, positive means the majority group mean is larger than the minority group mean. Bolded values indicate significant *t*-tests ($p < .05$, two-tailed).

ICTL Validation Analyses

The ICTL test is a cognitive measure designed in the mold of ASVAB tests that should theoretically have the strongest relationship with cyber-specific task- or knowledge-based performance outcomes such as course grades, training restart, and MOS-specific job knowledge/performance (i.e., "Can Do" criteria). This will be somewhat difficult to assess in the purest sense because there are no MOS-specific JKT data for the only cyber related target MOS (25B) in the ICTL analysis database.

The ICTL test may also function well as an indirect indicator of select fit- or motivation-based performance outcomes (i.e., "Will Do" criteria) in relevant occupations. Similar to ASVAB technical subtests, the ICTL measure is an information test. Information tests were among the most successful and most highly valid printed classification tests created by the Army Air Force's (AAF) Aviation Psychology Program during World War II. Guilford and Lacey (1947) described the logic of information tests as follows:

> *It is becoming recognized more and more that what a person knows or does not know can be used to reveal a number of things concerning his personal background. Since he is to a large extent a product of his personal experience, and since what he is bodes good or ill concerning his future status in one respect or another, knowledge scores promise to have predictive value.* (p. 341)

The key notion is that information tests are thought to be indirect measures of interest, motivation, and skill in a particular area.

Table 6.4 contains the bivariate correlations between ICTL scores and available predictor and criterion variables. Among the predictors, ICTL scores have the strongest relationship with the General Science (GS) and Electronics Information (EI) subtests as well as the Verbal (VE) composite. These relationships are consistent with those observed in the larger Service applicant sample (Trippe & Russell, 2011). In addition to sharing some conceptual overlap with GS and EI tests, the ICTL test has a verbal load such that sufficient language ability is required to access the content. The general positive association between ICTL and all cognitively based measures (i.e., ASVAB tests, Knowledge & Skill criterion composite) is also noteworthy.

Table 6.4. ***Predictor/Criterion Relationships with ICTL***

Predictor/Criterion	*n*	*r*	Predictor/Criterion	*n*	*r*
AFQT	1758	**.62**	12-Month Attrition	417	-.03
ASVAB - GS	1758	**.56**	18-Month Attrition	39	.20
ASVAB - AR	1758	**.45**	Army Life Adjustment	1493	.00
ASVAB - WK	1758	**.57**	Overall Performance	365	.01
ASVAB - PC	1758	**.48**	Physical Fitness	1422	**-.06**
ASVAB - MK	1758	**.36**	Commitment & Fit	1430	-.02
ASVAB - EI	1758	**.52**	MOS Fit	1493	-.01
ASVAB - AS	1758	**.31**	Retention Cognitions	1430	**-.11**
ASVAB - MC	1758	**.48**	Knowledge & Skill	1127	**.39**
ASVAB - AO	1720	**.31**	Training Restart	1550	-.02
ASVAB - VE	1758	**.59**	Disciplinary Incidents	1429	.02
6-Month Attrition	932	.02			

Note. Bolded correlations are significant ($p < .05$; two-tailed).

ICTL scores have statistically significant relationships with the Knowledge & Skill, Retention Cognitions, and Physical Fitness criterion scores. The latter two relationships are negative, suggesting those with higher ICTL aptitude feel less strongly about making the Army a career and are slightly less physically fit. The positive relationship with the Knowledge & Skill and Retention Cognitions composites is consistent with the expectation of ICTL as a predictor of Can Do performance. The relationship between ICTL and the Commitment and Fit composite is effectively zero. The ICTL test is not expected to be a general predictor of Will Do outcomes across MOS, but rather should only function as such for cyber related occupations.

Table 6.5 contains the correlations between ICTL and available criteria by MOS. ICTL scores have the strongest relationship with the Knowledge and Skill criterion composite. Correlations are statistically significant for all MOS and do not exhibit evidence of discriminant validity. That is, the relationship between ICTL and Knowledge and Skill scores does not appear to vary by MOS such that the ICTL test is more strongly related to performance for the 25B MOS (i.e., the one cyber related occupation in the target MOS) than the remaining MOS. Recall, however, that the Knowledge and Skill composite combines MOS-specific and WTBD JKTs or AIT course grades if available. AIT course grades, but no MOS-specific JKT data, are available for 25B, but are not available in substantial numbers for Soldiers enlisted in the other MOS. With these limitations in mind, we nevertheless attempted to further focus on discriminant validity for the prediction of cyber specific knowledge and skill outcomes. To do so, we examined the relationship between ICTL scores and the available indicators of cyber-specific Can Do performance. Table 6.5 reports correlations between ICTL scores and the MOS-specific JKT or AIT course grades, as available. A simple structure pattern of discriminant validity does not emerge, but criterion type is confounded with MOS in this sample. The ICTL test is a cognitive measure that will have a moderate to strong relationship with other measures that share a general mental ability component. The absence of a common cyber-specific criterion measure and presence of a generally high degree of association among cognitively based assessments combine to make differential validity difficult to evaluate in this performance domain.

Next, the extent to which the ICTL could be used as an indicator of fit was examined. As indicated in Table 6.5, ICTL scores have a relatively strong relationship with perceptions of MOS fit. ICTL scores also have a significant positive relationship with MOS Fit in 25B and significant negative relationships with MOS Fit in 11B and 88M. The relationship is not significant in 31B and 68W. This pattern of differential validity suggests that ICTL is a useful and valid predictor of MOS fit and thus potentially valid as a classification tool in this regard. No other patterns of differential validity emerge in Table 6.5. This includes the Training Restart score, in which a differential validity structure may be expected. Although not a very large effect, ICTL scores have a significant negative relationship with the Physical Fitness score in the 25B and 68W MOS. ICTL scores also have a significant negative relationship with the Retention Cognitions in 11B and 25B.

Table 6.6 contains incremental validity of ICTL scores beyond AFQT by MOS. ICTL scores provide statistically significant incremental validity beyond AFQT in predicting Knowledge and Skill scores in the 25B, 31B, and 88M MOS. The same pattern of significance emerges in the incremental validity analysis of available MOS-specific JKTs and AIT course grades. Although 25B is the only MOS for which the ICTL test is directly relevant, the cognitive elements shared by predictor and criterion assessments is evident in these MOS. That is, the ICTL test and the Knowledge & Skill composite (as well as the individual assessments that comprise the composite) have a known general mental ability component. It is difficult to separate the general and specific dimensions of each predictor-criterion relationship.

The 25B MOS is the only occupation for which ICTL scores provide statistically significant incremental validity in predicting Retention Cognitions. Unfortunately ICTL scores have a negative relationship with this score, suggesting that those of higher aptitude have a weaker desire to remain in their occupation. These higher aptitude individuals may be more likely than lower aptitude individuals to have attractive job opportunities outside of military Service. ICTL scores also provide significant incremental validity in predicting MOS Fit in the 25B and 11B MOS. The relationship between ICTL and MOS Fit is negative in the 11B MOS, suggesting those of higher ICTL aptitude fit less well in the 11B MOS. Conversely, the relationship between ICTL and MOS Fit is positive in 25B.

Table 6.5. ***ICTL Relationships with Outcomes by MOS***

	11B		25B		31B		68W		88M	
Criteria	*n*	*r*	*n*	*r*	*n*	*r*	*n*	*r*	*n*	*r*
6-Month Attrition	397	.07	-	-	138	.01	119	-	-	-
12-Month Attrition	235	.02	-	-	50	-.12	93	.05	-	-
Army Life Adjustment	496	-.04	228	.07	281	.06	217	.09	271	-.04
Overall Performance	143	.05	-	-	104	.05	118	-.04	-	-
Physical Fitness	487	-.03	192	**-.15**	273	-.07	208	**-.16**	262	.00
Commitment & Fit	488	-.08	194	.14	274	.01	211	.06	263	-.06
MOS Fit	496	**-.15**	228	**.29**	281	-.07	217	.04	271	**-.24**
Retention Cognitions	488	**-.12**	194	**-.27**	274	.04	211	.02	263	-.09
Knowledge & Skill	376	**.39**	105	**.48**	252	.47	187	**.25**	207	**.51**
MOS-Specific JKT	389	**.35**	-	-	259	.43	195	**.15**	213	**.39**
AIT Course Grade	-	-	296	**.45**	-	-	-	-	-	-
Training Restart	502	.02	295	-.06	276	-.07	213	-.01	264	-.09
Disciplinary Incidents	488	-.01	194	.06	273	-.03	211	.07	263	.02

Note. Bolded correlations are significant ($p < .05$; two-tailed). Missing cells indicate insufficient data ($n < 50$) or no variance in the outcome (i.e., no attrition at 6 months).

Table 6.6. ***Incremental Validity of ICTL over AFQT***

	11B				25B				31B			
		AFQT	AFQT+ ICTL	ΔR		AFQT	AFQT+ ICTL	ΔR		AFQT	AFQT+ ICTL	ΔR
	n	*r* (r_{pb})	*R* (r_{pb})	Δr_{pb}	*n*	*R* (r_{pb})	*R* (r_{pb})	Δr_{pb}	*n*	*R* (r_{pb})	*R* (r_{pb})	Δr_{pb}
6-Month Attrition	396	.07	.08	.00	-	-	-	-	137	.08	.10	.01
12-Month Attrition	234	.01	.02	.01	-	-	-	-	49	.05	.19	.14
Army Life Adjustment	495	**.09**	**.16**	**.07**	227	.08	.09	.00	280	.01	.07	.06
Overall Performance	142	**.21**	**.26**	.04	-	-	-	-	103	.03	.05	.02
Physical Fitness	486	**.16**	**.25**	**.09**	191	.14	.16	.02	272	.02	.07	.05
Commitment & Fit	487	.02	.10	**.08**	193	.09	.14	.05	273	.05	.06	.02
MOS Fit	496	.05	**.17**	**.12**	228	**.18**	**.29**	**.11**	283	**.14**	.14	.00
Retention Cognitions	487	**.20**	**.20**	.00	193	**.26**	**.30**	**.04**	273	.06	.10	.05
Knowledge & Skill	375	**.53**	**.54**	.00	104	**.55**	**.58**	**.03**	251	**.51**	**.55**	**.04**
MOS-Specific JKT	389	**.45**	**.46**	.01	-	-	-	-	259	**.47**	**.51**	**.04**
AIT Course Grade	-	-	-	-	296	**.42**	**.49**	**.08**	-	-	-	-
Training Restart	501	.04	.07	.04	294	.02	.07	.05	275	.06	.07	.01
Disciplinary Incidents	487	.08	.10	.02	193	.12	.12	.00	272	.03	.03	.00

	68W				88M			
		AFQT	AFQT+ ICTL	ΔR		AFQT	AFQT+ ICTL	ΔR
	n	*R* (r_{pb})	*R* (r_{pb})	Δr_{pb}	*n*	*R* (r_{pb})	*R* (r_{pb})	Δr_{pb}
6-Month Attrition	-	-	-	-	-	-	-	-
12-Month Attrition	92	.04	.09	.05	-	-	-	-
Army Life Adjustment	216	.12	.13	.01	270	.07	.07	.00
Overall Performance Ratings	117	.04	.05	.01	-	-	-	-
Physical Fitness	207	.06	**.22**	**.16**	261	.01	.02	.01
Commitment and Fit	210	.07	.07	.00	262	**.13**	.14	.00
MOS Fit	217	.09	.09	.00	271	**.28**	**.29**	.01
Retention Cognitions	210	.04	.06	.02	262	**.15**	.15	.00
Knowledge & Skill	186	**.32**	**.34**	.02	206	**.47**	**.54**	**.07**
MOS Specific JKT	195	**.26**	**.26**	.00	213	**.40**	**.43**	**.03**
AIT Course Grade	-	-	-	-	-	-	-	-
Training Restart	212	**.20**	**.22**	.02	263	.08	.09	.02
Disciplinary Incidents	210	.11	**.18**	**.07**	262	.02	.05	.03

Note. Bolded correlations are significant ($p < .05$; two-tailed). Missing cells indicate insufficient data ($n < 50$).

Summary and Discussion

Results of the validity analyses presented here suggest that the ICTL test is a valid predictor of both Can Do and Will Do performance dimensions. ICTL scores have an appreciable positive relationship with (a) the Knowledge & Skill composite and (b) available MOS-specific JKTs and AIT course grades in all MOS. ICTL scores provide significant incremental validity in predicting this Can Do indicator for three out of five MOS. The pattern of validity and incremental validity results in predicting Can Do outcomes is not readily interpretable as demonstrating discriminant validity. That is, ICTL scores do not appear to necessarily be better or stronger predictors of Can Do performance for 25B than the other MOS. Evaluation convergent and discriminant validity are nevertheless complicated by (a) the absence of a common occupation-specific criterion measure and (b) the high level of general positive association among cognitively based predictor and criterion measures. Complicating matters even further is the fact that 25B is not the only MOS for which technology is relevant. Although 25B is the only MOS for which criterion assessments will have a direct cyber-specific component, general performance in virtually all MOS will involve information and communications technology literacy. Those who are facile with technology will have an edge over those who do not in nearly any occupation. Thus, the finding that the ICTL showed positive relationships across MOS is not altogether surprising.

The clearest evidence of convergent and discriminant validly is observed in the pattern of relationships between ICTL scores and MOS Fit. ICTL scores have a significant positive relationship with MOS Fit in the 25B MOS and either no relationship or a significant negative relationship in the remaining MOS. As noted previously, ICTL scores may be an indicator of interest in the area of information technology which ultimately leads to greater perceived fit.

Overall, the ICTL is a promising and useful new predictor. It proved to not only be a valid predictor of both Can Do and Will Do performance dimensions but also displayed incremental validity over the AFQT for important outcomes.

CHAPTER 7: SUMMARY AND A LOOK AHEAD

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Summary of the TOPS IOT&E Method

In an effort to expand the basis on which applicants are evaluated for enlistment, the Army is conducting an initial operational test and evaluation (IOT&E) of the Tier One Performance Screen (TOPS). The TOPS assessments, including the Tailored Adaptive Personality Assessment System (TAPAS), the Information/Communications Technology Literacy (ICTL) test, and starting in FY2014, the Work Preferences Assessment (WPA), are being administered to non-prior service applicants testing at MEPS locations.

To evaluate the TAPAS, ICTL, and WPA, the Army is collecting training criterion data on Soldiers in selected MOS as they complete their IMT. The criterion measures include job knowledge tests (JKTs), an attitudinal person-environment fit assessment (the Army Life Questionnaire; ALQ), and performance rating scales (PRS) completed by the Soldiers' cadre members. Course grades and completion rates are obtained from administrative records for all Soldiers, regardless of MOS. The plan is to construct analysis datasets and conduct cumulative validation analyses at 6-month intervals throughout the IOT&E period.

Job performance data are also being collected from Soldiers in their units to gather data on Soldiers who completed the TAPAS (and WPA and ICTL) at entry. These measures again include JKTs, the ALQ, and supervisor ratings. Finally, the separation status of all Soldiers who took the TAPAS at entry is being tracked throughout the course of the research.

The December 2012 data file includes a total of 344,953 applicants who took the TAPAS. Of these, 309,110 were in the TOPS Applicant Sample. The Applicant Sample was determined by excluding Education Tier 3, AFQT Category V, and prior service applicants from the master data file. Of that Applicant Sample, 141,170 (45.7%) had a record in at least one of the administrative criterion data sources; 17,670 had IMT data collected from the schoolhouse and 1,053 had in-unit criterion data.

Data from the JKTs, PRS, ALQ, and administrative sources were combined to yield an array of scores representing important Soldier outcomes. In general, the criterion scores exhibit acceptable and theoretically consistent psychometric properties. The exception to this is the Army-wide and MOS-specific PRS, which continue to exhibit low interrater reliability coefficients. Results involving the PRS should be interpreted with caution.

Summary of Evaluation Results to Date

Evaluation results thus far suggest that, while the magnitude of the predictive validity estimates are not as large as those found in the experimental EEEM research (Knapp & Heffner, 2010), the TAPAS holds promise for new Soldier selection. Results of the incremental validity analyses indicate that the TAPAS predicts important first-term criteria over and above the AFQT, especially measures tapping non-technical aspects of Soldier performance, such as physical fitness, adjustment to Army life, commitment and fit, and discipline. The revised Will-Do composite was associated with the greatest incremental validity gains compared to other TOPS composites. This was especially true for the prediction of physical fitness. None of the TOPS composites demonstrated utility in incrementing the AFQT in the prediction of attrition up to 30 months in service. Results of the previously reported classification analyses, however, indicated that the TAPAS has the potential to enhance matching new Soldiers to MOS, particularly for minimizing attrition. That is, while the TOPS composites did not show global utility in predicting attrition, attrition may be decreased by better matching Soldiers with MOS using the TAPAS.

Results of the ICTL validity analyses suggest that the ICTL test is a valid predictor of both Can Do and Will Do performance dimensions across both cyber and other MOS. Specifically, ICTL scores have an appreciable positive relationship with (a) the Knowledge & Skill composite and (b) available MOS-specific JKTs and AIT course grades in all MOS. ICTL scores provide significant incremental validity in predicting this Can Do indicator for three out of five MOS. Attempts to examine discriminant validity evidence is complicated by the lack of MOS-specific criterion data for the primary cyber MOS (25B) included in the currently available database.

Looking Ahead

Changes to Predictor Measures

In FY2014, a third series of new adaptive forms of the TAPAS will be introduced at the MEPS. Each form measures 13 dimensions. All three 13D forms assess the same 10 core dimensions, plus three of seven experimental dimensions. The seven experimental dimensions assessed vary by version. In total, the newer versions of the TAPAS collectively measure 17 dimensions. The experimental dimensions will be evaluated for potential use in revised or new TOPS composites, once sufficient data are available.

Along with the new TAPAS versions, a new TOPS screen also will be fielded to select new Soldiers. The new TOPS screen will be based on the new TOPS composites (Can-Do, Will-Do, Adaptation). The new TOPS composites incorporate several enhancements over the existing composites and were constructed from analyses of the most current IOT&E data. Chapter 5 summarized the predictive validity of the new TOPS composites, compared to the existing composites. Overall, the new Will-Do and Adaptation composites evidenced higher predictive validity, on average, than the existing composites, although the magnitude of the gains varied by criterion.

Analyses

The semi-annual analyses will continue to include basic psychometric, validation, and incremental validation analyses. In coming years, however, we will document analyses in a single annual technical report rather than two technical reports (interim and annual). As needed, we will examine the comparability of new TAPAS versions to prior forms before determining if the data can be combined for purposes of analysis. We also will try an alternative approach from prior analysis cycles to modeling MOS classification outcomes that may result in evaluation results that can more meaningfully inform policy decisions.

The next set of TOPS evaluation analyses will be conducted based on a data file constructed in June 2013. We will continue to update or to modify our analysis plans as the Army's goals for the TOPS IOT&E evolve or to better meet the informational needs of Army stakeholders.

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APPENDIX A

PREDICTOR MEASURE PSYCHOMETRIC PROPERTIES IN THE APPLICANT SAMPLE

Table A.1. ***Raw Mean and Standard Deviations for the TOPS Composites and TAPAS Scales on the 15D-Static and 15D-CAT-1 Forms (June 2009-August 2011)***

TOPS Composite/ TAPAS Scale	15D-Static/CAT-1					
	Tier 1 (n = 161,442)		Tier 2 (n = 7,095)		Tier 1+ 2 (Combined) (*n* = 168,537)	
	M	*SD*	*M*	*SD*	*M*	*SD*
Individual TAPAS Scales [a]						
Achievement	.16	.48	.20	.49	.16	.48
Adjustment	.00	.57	.07	.58	.00	.57
Adventure Seeking	--	--	--	--	--	--
Attention Seeking	-.21	.53	-.24	.52	-.22	.53
Commitment to Serve	--	--	--	--	--	--
Cooperation	-.06	.37	-.07	.38	-.06	.37
Courage	--	--	--	--	--	--
Dominance	.02	.59	-.02	.60	.02	.59
Even Tempered	.17	.48	.23	.47	.17	.48
Intellectual Efficiency	-.04	.58	-.01	.57	-.04	.58
Non-Delinquency	.10	.46	.03	.49	.10	.46
Optimism	.15	.46	.17	.46	.15	.46
Order	-.42	.55	-.43	.53	-.42	.55
Physical Conditioning	.04	.63	-.10	.60	.04	.62
Responsibility	--	--	--	--	--	--
Self-Control	.07	.53	.13	.53	.07	.53
Selflessness	-.20	.43	-.19	.43	-.20	.43
Situational Awareness	--	--	--	--	--	--
Sociability	-.06	.59	-.10	.59	-.06	.59
Team Orientation	--	--	--	--	--	--
Tolerance	-.23	.57	-.21	.56	-.23	.57
TOPS Composites (Original)						
Can-Do	110.57	16.51	111.38	16.75	110.60	16.53
Will-Do	105.54	14.84	104.63	15.15	105.50	14.86
TOPS Composites (Revised)						
Can-Do	99.76	20.10	101.66	19.21	99.84	20.07
Will-Do	100.55	20.08	98.06	19.57	100.45	20.06
Adaptation	100.69	20.04	98.89	19.20	100.62	20.01

Note. Results are limited to the TOPS Applicant Sample (non-prior service, Education Tier 1 and 2, and AFQT ≥ 10) with valid TAPAS score data.

[a] Not all TAPAS scales were administered in every version; missing *M* and *SD* indicate that the scale was not administered.

Table A.2. ***Raw Mean and Standard Deviations for the TOPS Composites and TAPAS Scales on Version 2, Form A (August 2011-September 2012)***

TOPS Composite/ TAPAS Scale	15D-CAT-1A					
	Tier 1 (n = 23,809)		Tier 2 (n = 1,846)		Tier 1+ 2 (Combined) (n = 25,655)	
	M	*SD*	*M*	*SD*	*M*	*SD*
Individual TAPAS Scales [a]						
Achievement	.23	.49	.29	.48	.24	.49
Adjustment	.09	.40	.16	.39	.10	.40
Adventure Seeking	--	--	--	--	--	--
Attention Seeking	-.33	.59	-.29	.61	-.32	.59
Commitment to Serve	--	--	--	--	--	--
Cooperation	.21	.53	.17	.50	.21	.53
Courage	--	--	--	--	--	--
Dominance	.37	.51	.34	.53	.37	.51
Even Tempered	.27	.49	.36	.50	.28	.49
Intellectual Efficiency	.05	.53	.16	.52	.06	.53
Non-Delinquency	.16	.52	.14	.56	.16	.53
Optimism	.30	.45	.28	.45	.30	.45
Order	-.26	.54	-.27	.53	-.26	.54
Physical Conditioning	.16	.56	.08	.54	.15	.56
Responsibility	--	--	--	--	--	--
Self-Control	-.25	.48	-.17	.50	-.25	.48
Selflessness	.05	.43	.00	.45	.05	.43
Situational Awareness	--	--	--	--	--	--
Sociability	-.18	.56	-.17	.57	-.18	.56
Team Orientation	--	--	--	--	--	--
Tolerance	.00	.52	.02	.51	.00	.52
TOPS Composites (Original)						
Can-Do	108.67	20.10	111.55	20.94	108.87	20.18
Will-Do	108.96	21.38	109.44	21.64	108.99	21.40
TOPS Composites (Revised)						
Can-Do	99.79	19.24	103.70	18.98	100.07	19.25
Will-Do	99.87	20.00	98.43	19.52	99.76	19.96
Adaptation	100.06	20.58	99.14	19.61	99.99	20.51

Note. Results are limited to the TOPS Applicant Sample (non-prior service, Education Tier 1 and 2, and AFQT ≥ 10) with valid TAPAS score data.

[a] Not all TAPAS scales were administered in every version; missing *M* and *SD* indicate that the scale was not administered.

Table A.3. ***Raw Mean and Standard Deviations for the TOPS Composites and TAPAS Scales on Version 2, Form B (August 2011-September 2012)***

TOPS Composite/ TAPAS Scale	*15D-CAT-2B*					
	Tier 1 (n = 47,624)		Tier 2 (n = 3,768)		Tier 1+ 2 (Combined) (n = 51,392)	
	M	*SD*	*M*	*SD*	*M*	*SD*
Individual TAPAS Scales [a]						
Achievement	.23	.48	.27	.48	.23	.48
Adjustment	.09	.38	.17	.38	.10	.38
Adventure Seeking	-.27	.59	-.23	.57	-.26	.59
Attention Seeking	-.32	.58	-.32	.61	-.32	.59
Commitment to Serve	.16	.52	.26	.49	.17	.52
Cooperation	.18	.52	.17	.52	.18	.52
Courage	--	--	--	--	--	--
Dominance	.32	.50	.30	.52	.32	.50
Even Tempered	.25	.47	.33	.49	.26	.47
Intellectual Efficiency	.03	.52	.10	.52	.03	.52
Non-Delinquency	.16	.53	.15	.56	.16	.53
Optimism	.25	.44	.24	.44	.25	.44
Order	-.24	.54	-.26	.54	-.24	.54
Physical Conditioning	.12	.55	.04	.53	.11	.55
Responsibility	--	--	--	--	--	--
Self-Control	--	--	--	--	--	--
Selflessness	.07	.44	.04	.45	.07	.44
Situational Awareness	.02	.49	.10	.50	.02	.49
Sociability	--	--	--	--	--	--
Team Orientation	--	--	--	--	--	--
Tolerance	--	--	--	--	--	--
TOPS Composites (Original)						
Can-Do	107.12	19.95	109.65	20.70	107.30	20.02
Will-Do	107.88	20.93	108.74	21.42	107.94	20.97
TOPS Composites (Revised) [b]						
Can-Do	--	--	--	--	--	--
Will-Do	99.90	19.81	98.39	19.60	99.79	19.80
Adaptation	--	--	--	--	--	--

Note. Results are limited to the TOPS Applicant Sample (non-prior service, Education Tier 1 and 2, and AFQT ≥ 10) with valid TAPAS score data.

[a] Not all TAPAS scales were administered in every version; missing *M* and *SD* indicate that the scale was not administered.

[b] A subset of the scales that compose the New Can-Do and Adaptation composites were not administered in this version of the TAPAS. Composites could not be computed.

Table A.4. ***Raw Mean and Standard Deviations for the TOPS Composites and TAPAS Scales on Version 2, Form C (August 2011-September 2012)***

TOPS Composite/ TAPAS Scale	15D-CAT-2C					
	Tier 1 (n = 47,801)		Tier 2 (n = 3,660)		Tier 1+ 2 (Combined) (n = 51,461)	
	M	*SD*	*M*	*SD*	*M*	*SD*
Individual TAPAS Scales [a]						
Achievement	.20	.47	.26	.46	.21	.47
Adjustment	.05	.38	.11	.37	.05	.38
Adventure Seeking	--	--	--	--	--	--
Attention Seeking	-.32	.58	-.31	.61	-.32	.58
Commitment to Serve	--	--	--	--	--	--
Cooperation	--	--	--	--	--	--
Courage	.10	.54	.19	.54	.11	.54
Dominance	.31	.49	.28	.49	.31	.49
Even Tempered	.29	.51	.37	.51	.29	.51
Intellectual Efficiency	.03	.53	.12	.51	.04	.53
Non-Delinquency	.17	.53	.14	.55	.16	.53
Optimism	.26	.44	.26	.45	.26	.44
Order	--	--	--	--	--	--
Physical Conditioning	.11	.55	.01	.51	.10	.55
Responsibility	.33	.46	.37	.48	.33	.46
Self-Control	-.24	.45	-.18	.45	-.24	.45
Selflessness	--	--	--	--	--	--
Situational Awareness	--	--	--	--	--	--
Sociability	-.17	.54	-.16	.56	-.17	.54
Team Orientation	-.07	.47	-.05	.51	-.07	.47
Tolerance	-.03	.51	-.01	.51	-.03	.51
TOPS Composites (Original)						
Can-Do	107.72	20.39	110.27	20.55	107.90	20.42
Will-Do	107.99	21.56	108.41	21.83	108.02	21.58
TOPS Composites (Revised) [b]						
Can-Do	--	--	--	--	--	--
Will-Do	99.97	19.65	98.21	18.98	98.84	19.61
Adaptation	--	--	--	--	--	--

Note. Results are limited to the TOPS Applicant Sample (non-prior service, Education Tier 1 and 2, and AFQT ≥ 10) with valid TAPAS score data.

[a] Not all TAPAS scales were administered in every version; missing *M* and *SD* indicate that the scale was not administered.

[b] A subset of the scales included in the New Can-Do and Adaptation composites were not administered in this version of the TAPAS. Composites could not be computed.

Table A.5. ***Correlations between TOPS Composites and TAPAS Scales with AFQT in the TOPS Applicant Sample by Version***

TOPS Composite/ TAPAS Scale	15D-Static/CAT-1 (June 2009-August 2011) Tier 1	Tier 2	Tier 1+ 2 (Combined)	15D-CAT-2 Forms (August 2011-September 2012) Tier 1	Tier 2	Tier 1+ 2 (Combined)
N	161,442	7,095	168,537	23,809 - 119,234	1,846 - 9,274	25,655- 128,508
Individual TAPAS Scales						
Achievement	**.10**	**.04**	**.10**	**.04**	-.01	**.04**
Adjustment	**.11**	**.10**	**.11**	**.13**	**.12**	**.13**
Adventure Seeking	--	--	--	**.11**	**.05**	**.11**
Attention Seeking	**.11**	**.08**	**.11**	**.01**	.00	**.01**
Commitment to Serve	--	--	--	**-.15**	**-.07**	**-.15**
Cooperation	**.01**	.01	**.01**	**-.13**	**-.09**	**-.13**
Courage	--	--	--	**.06**	**.05**	**.06**
Dominance	**.08**	-.01	**.08**	**.12**	.03	**.12**
Even Tempered	**.08**	**.08**	**.08**	**.08**	**.10**	**.08**
Intellectual Efficiency	**.42**	**.37**	**.41**	**.31**	**.29**	**.31**
Non-Delinquency	**-.01**	.02	**-.01**	**-.06**	-.02	**-.06**
Optimism	**.01**	.00	**.01**	**.09**	**.05**	**.09**
Order	**-.18**	**-.17**	**-.18**	**-.16**	**-.16**	**-.16**
Physical Conditioning	**.05**	-.02	**.05**	**.07**	-.02	**.06**
Responsibility	--	--	--	**.15**	**.07**	**.14**
Self-Control	**-.01**	**.04**	**-.01**	**-.05**	-.02	**-.04**
Selflessness	**-.07**	**-.05**	**-.07**	**-.08**	**-.09**	**-.08**
Situational Awareness	--	--	--	.01	.03	.01
Sociability	**-.09**	**-.06**	**-.09**	**-.12**	**-.09**	**-.12**
Team Orientation	--	--	--	**-.11**	**-.11**	**-.11**
Tolerance	**-.02**	.01	**-.02**	**.08**	**.06**	**.08**
TOPS Composites (Original)						
Can-Do	**.23**	**.19**	**.23**	**.15**	**.13**	**.15**
Will-Do	**.05**	.02	**.05**	**.04**	.02	**.04**
TOPS Composites (Revised)						
Can-Do	**.45**	**.40**	**.45**	**.38**	**.33**	**.37**
Will-Do	**.10**	.01	**.09**	**.11**	.00	**.10**
Adaptation	**.19**	**.13**	**.19**	**.21**	**.15**	**.21**

Note. Correlations in bold are statistically significant, $p < .01$ (two-tailed). Results are limited to the TOPS Applicant Sample (non-prior service, Education Tier 1 and 2, AFQT Category IV and above) with valid TAPAS score data.

Table A.6. ***Descriptive Statistics for AFQT, ASVAB Subtests, and Aptitude Area (AA) Composites by Version in the TOPS Applicant Sample***

	15D-Static/CAT-1 (June 2009-August 2011)					15D-CAT-2 Forms A-C (August 2011-September 2012)				
Composite/Subtest	*n*	*M*	*SD*	*Min*	*Max*	*n*	*M*	*SD*	*Min*	*Max*
AFQT	168,685	57.07	23.07	10	99	128,508	53.23	22.05	10	99
ASVAB Subtests										
Arithmetic Reasoning (AR)	167,832	52.57	7.69	18	72	127,935	51.23	7.56	23	72
Assembling Objects (AO)	165,247	55.20	7.79	25	70	121,118	54.14	7.83	26	70
Auto & Shop Information (AS)	167,831	49.95	9.39	19	86	127,934	48.02	9.02	22	83
Electronics Information (EI)	167,831	51.99	9.07	16	84	127,934	50.42	8.85	14	84
General Science (GS)	167,832	51.69	8.40	19	76	127,935	50.60	8.20	20	76
Math Knowledge (MK)	167,832	53.46	6.97	24	73	127,935	52.89	6.70	26	73
Mechanical Comprehension (MC)	167,831	53.44	8.41	14	82	127,933	51.92	8.22	23	82
Paragraph Comprehension (PC)	167,832	52.86	7.04	21	69	127,935	51.87	6.84	22	69
Word Knowledge (WK)	167,832	51.33	8.04	16	76	127,934	50.04	7.69	16	76
Aptitude Area (AA) Composites										
Clerical (CL)	167,833	105.88	13.90	35	152	127,934	103.26	13.30	56	152
Combat (CO)	167,833	105.69	14.84	29	160	127,934	102.60	14.20	54	159
Electronics (EL)	167,833	105.47	14.84	29	160	127,934	102.31	14.20	54	159
Field Artillery (FA)	167,833	105.85	14.76	28	159	127,934	102.78	14.14	55	159
General Maintenance (GM)	167,833	105.17	15.30	28	161	127,934	101.88	14.68	51	160
General Technical (GT)	167,834	104.92	14.31	39	149	127,936	102.15	13.77	49	149
Mechanical Maintenance (MM)	167,833	104.28	16.30	25	165	127,934	100.58	15.64	48	163
Operators and Food Service (OF)	167,833	105.17	15.27	27	160	127,934	101.81	14.65	53	160
Signal Communications (SC)	167,833	105.87	14.46	29	159	127,934	102.91	13.82	55	158
Skilled Technical (ST)	167,833	105.74	14.48	32	157	127,934	102.78	13.84	55	156

Note. Results are limited to the TOPS Applicant Sample (non-prior service, Education Tier 1 and 2, AFQT Category IV and above).

Table A.7. ***Descriptive Statistics for AFQT, ASVAB Subtests, and Aptitude Area (AA) Composites in 15D Static and 15D CAT Version 1 by Education Tier***

	Tier 1					Tier 2				
Composite/Subtest	*n*	*M*	*SD*	*Min*	*Max*	*n*	*M*	*SD*	*Min*	*Max*
AFQT	161,575	57.19	23.23	10	99	7,110	54.18	19.05	10	99
ASVAB Subtests										
Arithmetic Reasoning (AR)	160,735	52.61	7.74	18	72	7,097	51.85	6.35	24	72
Assembling Objects (AO)	158,268	55.22	7.80	25	70	6,979	54.79	7.51	26	69
Auto & Shop Information (AS)	160,734	49.84	9.40	19	86	7,097	52.27	8.81	25	81
Electronics Information (EI)	160,734	51.95	9.11	16	84	7,097	53.04	7.83	18	82
General Science (GS)	160,735	51.7	8.45	19	76	7,097	51.66	6.99	23	74
Math Knowledge (MK)	160,735	53.62	6.97	24	73	7,097	49.76	5.68	28	73
Mechanical Comprehension (MC)	160,734	53.42	8.45	14	82	7,097	53.89	7.50	23	79
Paragraph Comprehension (PC)	160,735	52.85	7.08	23	69	7,097	53.15	6.19	21	69
Word Knowledge (WK)	160,735	51.31	8.10	16	76	7,097	51.83	6.67	22	76
Aptitude Area (AA) Composites										
Clerical (CL)	160,736	105.98	14.01	35	152	7,097	103.77	10.86	56	143
Combat (CO)	160,736	105.73	14.96	29	160	7,097	104.58	11.88	51	153
Electronics (EL)	160,736	105.5	14.96	29	160	7,097	104.85	11.83	52	151
Field Artillery (FA)	160,736	105.91	14.88	28	159	7,097	104.66	11.79	51	152
General Maintenance (GM)	160,736	105.19	15.42	28	161	7,097	104.87	12.38	48	154
General Technical (GT)	160,737	104.94	14.43	39	149	7,097	104.62	11.42	54	145
Mechanical Maintenance (MM)	160,736	104.22	16.40	25	165	7,097	105.61	13.79	46	155
Operators and Food Service (OF)	160,736	105.17	15.38	27	160	7,097	105.22	12.37	50	152
Signal Communications (SC)	160,736	105.93	14.58	29	159	7,097	104.46	11.41	54	150
Skilled Technical (ST)	160,736	105.79	14.60	32	157	7,097	104.69	11.42	56	148

Note. Results are limited to the TOPS Applicant Sample (non-prior service, Education Tier 1 and 2, AFQT Category IV and above) with valid TAPAS scores.

Table A.8. ***Descriptive Statistics for AFQT, ASVAB Subtests, and Aptitude Area (AA) Composites in TAPAS Version 2 Forms by Education Tier***

	Tier 1					Tier 2				
Composite/Subtest	*n*	*M*	*SD*	*Min*	*Max*	*n*	*M*	*SD*	*Min*	*Max*
AFQT	119,234	53.15	22.28	10	99	9,274	54.21	18.81	10	99
ASVAB Subtests										
Arithmetic Reasoning (AR)	118,684	51.19	7.63	23	72	9,251	51.70	6.53	27	72
Assembling Objects (AO)	112,261	54.11	7.85	26	70	8,857	54.56	7.63	27	69
Auto & Shop Information (AS)	118,683	47.78	8.99	22	83	9,251	51.12	8.81	22	82
Electronics Information (EI)	118,683	50.26	8.89	14	84	9,251	52.44	7.96	19	80
General Science (GS)	118,684	50.53	8.28	20	76	9,251	51.43	7.10	20	76
Math Knowledge (MK)	118,684	53.11	6.73	26	73	9,251	50.07	5.61	28	72
Mechanical Comprehension (MC)	118,682	51.80	8.25	23	82	9,251	53.40	7.63	24	78
Paragraph Comprehension (PC)	118,684	51.78	6.89	22	69	9,251	53.08	6.08	27	69
Word Knowledge (WK)	118,684	49.92	7.74	16	76	9,251	51.59	6.74	21	76
Aptitude Area (AA) Composites										
Clerical (CL)	118,683	103.24	13.47	56	152	9,251	103.54	10.95	61	148
Combat (CO)	118,683	102.50	14.35	54	159	9,251	103.83	12.09	61	155
Electronics (EL)	118,683	102.17	14.34	54	159	9,251	104.09	12.03	59	156
Field Artillery (FA)	118,683	102.69	14.29	55	159	9,251	103.97	12.00	62	155
General Maintenance (GM)	118,683	101.72	14.82	51	160	9,251	103.95	12.63	59	157
General Technical (GT)	118,685	101.99	13.92	49	149	9,251	104.27	11.51	60	145
Mechanical Maintenance (MM)	118,683	100.30	15.73	48	163	9,251	104.22	14.04	56	161
Operators and Food Service (OF)	118,683	101.62	14.78	53	160	9,251	104.28	12.63	59	157
Signal Communications (SC)	118,683	102.83	13.97	55	158	9,251	103.91	11.56	60	154
Skilled Technical (ST)	118,683	102.68	13.99	55	156	9,251	104.13	11.57	61	152

Note. Results are limited to the TOPS Applicant Sample (non-prior service, Education Tier 1 and 2, AFQT Category IV and above).

Table A.9. ***Correlations among TOPS Composites and TAPAS Scale Scores in the Applicant Sample***

TAPAS Scale/ TOPS Composite/	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Individual TAPAS Scales															
1. Achievement															
2. Adjustment	**.10**														
3. Adventure Seeking	**.10**	**.15**													
4. Attention Seeking	**.04**	**.09**	**.17**												
5. Commitment to Serve	**.11**	**.05**	**.04**	-.01											
6. Cooperation	**.10**	**.10**	**-.13**	**-.05**	**.04**										
7. Courage	**.21**	**.15**	**--**	**.10**	**--**	**--**									
8. Dominance	**.31**	**.11**	**.13**	**.19**	**.05**	**.03**	**.21**								
9. Even Tempered	**.11**	**.21**	**-.04**	**-.04**	**.05**	**.27**	**.04**	**-.02**							
10. Intellectual Efficiency	**.25**	**.18**	**.07**	**.08**	**.01**	**.01**	**.18**	**.26**	**.09**						
11. Non-Delinquency	**.19**	**.01**	**-.17**	**-.14**	**.12**	**.22**	**.03**	.00	**.22**	**.03**					
12. Optimism	**.17**	**.27**	**.02**	**.10**	**.01**	**.16**	**.03**	**.16**	**.19**	**.10**	**.11**				
13. Order	**.17**	**-.06**	**-.09**	**-.08**	**.05**	**.08**	**--**	**.09**	.00	**.04**	**.12**	**.01**			
14. Physical Conditioning	**.17**	**.06**	**.25**	**.10**	.00	**-.02**	**.12**	**.19**	**-.08**	**.05**	**-.04**	**.07**	**.04**		
15. Responsibility	**.30**	**.12**	**--**	**-.05**	**--**	**--**	**.14**	**.15**	**.15**	**.16**	**.23**	**.15**	**--**	**.04**	
16. Self-Control	**.20**	**.05**	**--**	**-.08**	**--**	**.08**	**.10**	**-.03**	**.17**	**.14**	**.22**	**.04**	**.16**	**-.06**	**.22**
17. Selflessness	**.12**	.00	**-.03**	**-.09**	**.04**	**.25**	**--**	**.09**	**.13**	.00	**.16**	**.08**	**.09**	**-.02**	**--**
18. Situational Awareness	**.19**	**.14**	**.10**	**.04**	**.07**	.00	**--**	**.11**	**.10**	**.25**	**.11**	**.08**	**.15**	**.05**	**--**
19. Sociability	**.05**	**.09**	**--**	**.34**	**--**	**.13**	**.08**	**.19**	**.01**	**.02**	**-.04**	**.17**	**-.04**	**.10**	**.03**
20. Team Orientation	**.06**	**.04**	**--**	**.12**	**--**	**--**	**.03**	**.10**	**.06**	**-.05**	**.05**	**.05**	**--**	**.05**	**.02**
21. Tolerance	**.10**	**.03**	**--**	**.02**	**--**	**.16**	**.03**	**.09**	**.14**	**.09**	**.08**	**.11**	**.04**	**-.04**	**.08**
22. Can-Do (current)	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
23. Will-Do (current)	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
24. Can-Do (revised)	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
25. Will-Do (revised)	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**
26. Adaptation (new)	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**

Note. Results are limited to the Applicant Sample (Non-prior service, Education Tier 1 and 2, AFQT Category IV and above) with valid TAPAS 15D. 15D-CAT, v5, v7 or v8 score data, n = 29,745 – 245,653. Correlations in bold are statistically significant, $p < .01$ (two-tailed).

Table A.9. ***(Continued))***

TAPAS Scale/ TOPS Composite/	16	17	18	19	20	21	22	23	24	25
Individual TAPAS Scales										
1. Achievement										
2. Adjustment										
3. Adventure Seeking										
4. Attention Seeking										
5. Commitment to Serve										
6. Cooperation										
7. Courage										
8. Dominance										
9. Even Tempered										
10. Intellectual Efficiency										
11. Non-Delinquency										
12. Optimism										
13. Order										
14. Physical Conditioning										
15. Responsibility										
16. Self-Control										
17. Selflessness	**.05**									
18. Situational Awareness	**--**	**.04**								
19. Sociability	**-.06**	**.06**	**--**							
20. Team Orientation	**.05**	**--**	**--**	**.22**						
21. Tolerance	**.06**	**.32**	**--**	**.10**	**.08**					
22. Can-Do (current)	**--**	**--**	**--**	**--**	**--**	**--**				
23. Will-Do (current)	**--**	**--**	**--**	**--**	**--**	**--**	**.71**			
24. Can-Do (revised)	**--**	**--**	**--**	**--**	**--**	**--**	**.50**	**.22**		
25. Will-Do (revised)	**--**	**--**	**--**	**--**	**--**	**--**	**.47**	**.51**	**.16**	
26. Adaptation (new)	**--**	**--**	**--**	**--**	**--**	**--**	**.21**	**.47**	**.40**	**.48**

Note. Results are limited to the Applicant Sample (Non-prior service, Education Tier 1 and 2, AFQT Category IV and above) with valid TAPAS 15D. 15D-CAT, v5, v7 or v8 score data, n = 29,745 – 245,653. Correlations in bold are statistically significant, $p < .01$ (two-tailed).

Table A.10. ***Correlations among TOPS Composites and TAPAS Scale Scores in the Applicant Sample by Education Tier***

TAPAS Scale/ TOPS Composite/	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Individual TAPAS Scales															
1. Achievement		**.10**	**.10**	**.04**	**.11**	**.10**	**.21**	**.31**	**.11**	**.25**	**.19**	**.17**	**.17**	**.17**	**.30**
2. Adjustment	**.09**		**.15**	**.09**	**.04**	**.10**	**.15**	**.12**	**.21**	**.18**	**.01**	**.27**	**-.06**	**.07**	**.12**
3. Adventure Seeking	**.09**	**.12**		**.17**	**.03**	**-.13**	--	**.13**	**-.04**	**.07**	**-.17**	**.02**	**-.09**	**.25**	--
4. Attention Seeking	**.05**	**.10**	**.19**		-.01	**-.05**	**.10**	**.18**	**-.04**	**.08**	**-.15**	**.10**	**-.08**	**.10**	**-.05**
5. Commitment to Serve	**.14**	**.04**	**.11**	.03		**.04**	--	**.05**	**.05**	**.01**	**.12**	.01	**.05**	.00	--
6. Cooperation	**.11**	**.11**	**-.14**	**-.04**	.03		--	**.03**	**.27**	**.01**	**.22**	**.16**	**.08**	**-.02**	--
7. Courage	**.21**	**.12**	--	**.12**	--	--		**.21**	**.04**	**.18**	**.03**	**.03**	--	**.12**	**.14**
8. Dominance	**.28**	**.10**	**.16**	**.19**	**.06**	**.03**	**.22**		**-.02**	**.26**	.00	**.17**	**.09**	**.19**	**.15**
9. Even Tempered	**.10**	**.19**	**-.08**	**-.05**	**.05**	**.29**	.02	**-.03**		**.09**	**.22**	**.19**	.00	**-.07**	**.15**
10. Intellectual Efficiency	**.23**	**.16**	**.05**	**.07**	.04	**.03**	**.18**	**.25**	**.09**		**.03**	**.10**	**.04**	**.06**	**.16**
11. Non-Delinquency	**.24**	**.05**	**-.17**	**-.12**	**.11**	**.26**	**.08**	**.02**	**.27**	**.07**		**.11**	**.12**	**-.04**	**.22**
12. Optimism	**.15**	**.26**	.04	**.09**	.03	**.17**	.04	**.12**	**.21**	**.09**	**.16**		**.01**	**.08**	**.15**
13. Order	**.17**	**-.04**	**-.05**	**-.06**	**.05**	**.08**	--	**.10**	.02	**.06**	**.13**	-.02		**.04**	--
14. Physical Conditioning	**.17**	**.04**	**.24**	**.09**	**.06**	.00	**.12**	**.19**	**-.07**	**.07**	**-.03**	**.05**	**.10**		**.05**
15. Responsibility	**.30**	**.10**	--	**-.05**	--	--	**.19**	**.17**	**.16**	**.16**	**.30**	**.14**	--	.02	
16. Self-Control	**.20**	**.08**	--	**-.07**	--	**.08**	**.10**	**-.03**	**.16**	**.13**	**.24**	**.05**	**.15**	**-.05**	**.24**
17. Selflessness	**.13**	.00	-.02	**-.07**	.04	**.26**	--	**.06**	**.14**	.02	**.21**	**.10**	**.10**	.01	--
18. Situational Awareness	**.22**	**.14**	**.11**	.03	**.10**	-.02	--	**.14**	**.09**	**.24**	**.11**	**.08**	**.14**	**.07**	--
19. Sociability	**.05**	**.10**	--	**.35**	--	**.14**	**.09**	**.18**	**.04**	.01	**-.03**	**.17**	**-.06**	**.07**	**.05**
20. Team Orientation	**.07**	**.05**	--	**.13**	--	--	.03	**.12**	**.07**	-.03	**.10**	.04	--	.01	**.06**
21. Tolerance	**.09**	**.05**	--	**.04**	--	**.16**	.02	**.07**	**.14**	**.10**	**.13**	**.11**	**.03**	**-.03**	**.08**
22. Can-Do (current)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
23. Will-Do (current)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
24. Can-Do (revised)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
25. Will-Do (revised)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
26. Adaptation (new)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Note. Results are limited to the Applicant Sample (non-prior service, Education Tier 1 and 2, AFQT Category IV and above) with valid TAPAS score data. Correlations above the diagonal are for Education Tier 1 applicants, n = 47,624 – 280,676. Correlations below the diagonal are for Education Tier 2 applicants, n = 3,660 – 16,369. Correlations in bold are statistically significant, $p < .01$ (two-tailed).

Table A.10. ***(Continued)***

TAPAS Scale/ TOPS Composite/	16	17	18	19	20	21	22	23	24	25	26
Individual TAPAS Scales											
1. Achievement	**.20**	**.12**	**.19**	**.05**	**.06**	**.11**	**.61**	**.56**	**.27**	**.65**	**.07**
2. Adjustment	**.05**	.00	**.14**	**.09**	**.04**	**.03**	**.25**	**.10**	**.17**	**.16**	**.13**
3. Adventure Seeking	--	**-.03**	**.10**	--	--	--	**-.02**	**-.04**	--	**.24**	--
4. Attention Seeking	**-.08**	**-.09**	**.04**	**.34**	**.12**	**.02**	**.03**	**-.42**	**-.04**	**.17**	**-.01**
5. Commitment to Serve	--	**.04**	**.07**	--	--	--	**.11**	**.12**	--	**.07**	--
6. Cooperation	**.08**	**.25**	.00	**.13**	--	**.16**	**.22**	**.24**	**-.03**	**.02**	**.02**
7. Courage	**.10**	--	--	**.08**	**.03**	**.03**	**.17**	**.11**	--	**.24**	--
8. Dominance	**-.03**	**.09**	**.11**	**.19**	**.10**	**.09**	**.19**	**.09**	**.12**	**.52**	.00
9. Even Tempered	**.17**	**.13**	**.10**	**.01**	**.06**	**.14**	**.53**	**.49**	**.20**	**.01**	**.36**
10. Intellectual Efficiency	**.14**	.00	**.25**	**.02**	**-.05**	**.09**	**.51**	**.13**	**.79**	**.23**	**.06**
11. Non-Delinquency	**.22**	**.16**	**.12**	**-.04**	**.04**	**.07**	**.55**	**.61**	**.03**	**.06**	**.03**
12. Optimism	**.04**	**.08**	**.09**	**.17**	**.06**	**.10**	**.51**	**.17**	**.04**	**.35**	**.07**
13. Order	**.16**	**.09**	**.15**	**-.04**	--	**.04**	**.10**	**.16**	**-.34**	**.10**	**-.43**
14. Physical Conditioning	**-.06**	**-.02**	**.05**	**.10**	**.06**	**-.04**	**.05**	**.35**	**.01**	**.76**	**.68**
15. Responsibility	**.22**	--	--	**.03**	**.02**	**.08**	**.35**	**.30**	--	**.23**	--
16. Self-Control		**.05**	--	**-.06**	**.05**	**.06**	**.34**	**.26**	**.14**	**.10**	.01
17. Selflessness	**.04**		**.04**	**.06**	--	**.32**	**.12**	**.17**	**-.09**	**.03**	**-.03**
18. Situational Awareness	--	.04		--	--	--	**.26**	**.16**	--	**.16**	--
19. Sociability	**-.06**	**.06**	--		**.22**	**.10**	**.09**	**-.08**	**-.37**	**.19**	**-.26**
20. Team Orientation	**.06**	--	--	**.24**		**.07**	**.06**	**.04**	--	**.11**	--
21. Tolerance	**.04**	**.30**	--	**.11**	**.10**		**.15**	**.09**	**-.17**	**.04**	**-.05**
22. Can-Do (current)	--	--	--	--	--	--		**.71**	**.50**	**.47**	**.21**
23. Will-Do (current)	--	--	--	--	--	--	**.73**		**.22**	**.52**	**.47**
24. Can-Do (revised)	--	--	--	--	--	--	**.46**	**.23**		**.16**	**.40**
25. Will-Do (revised)	--	--	--	--	--	--	**.46**	**.49**	**.14**		**.48**
26. Adaptation (new)	--	--	--	--	--	--	**.20**	**.45**	**.39**	**.47**	

Note. Results are limited to the Applicant Sample (non-prior service, Education Tier 1 and 2, AFQT Category IV and above) with valid TAPAS score data. Correlations above the diagonal are for Education Tier 1 applicants, n = 47,624 – 280,676. Correlations below the diagonal are for Education Tier 2 applicants, n = 3,660 – 16,369. Correlations in bold are statistically significant, $p < .01$ (two-tailed). For test security reasons, correlations between the TAPAS scales and TOPS composites are excluded.

Table A.11. ***Correlations among AFQT, ASVAB Subtests, and Aptitude Area (AA) Composite Scores in the TOPS Applicant Sample***

Composite/Subtest	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1. AFQT																			
ASVAB Subtests																			
2. Arithmetic Reasoning (AR)	**.82**																		
3. Assembling Objects (AO)	**.44**	**.47**																	
4. Auto & Shop Info (AS)	**.37**	**.32**	**.27**																
5. Electronics Information (EI)	**.59**	**.47**	**.36**	**.68**															
6. General Science (GS)	**.73**	**.54**	**.36**	**.51**	**.68**														
7. Math Knowledge (MK)	**.71**	**.68**	**.38**	**.07**	**.28**	**.42**													
8. Mech Comprehension (MC)	**.65**	**.60**	**.52**	**.62**	**.68**	**.66**	**.40**												
9. Para Comprehension (PC)	**.80**	**.55**	**.35**	**.35**	**.53**	**.64**	**.41**	**.54**											
10. Word Knowledge (WK)	**.81**	**.48**	**.28**	**.41**	**.59**	**.72**	**.34**	**.55**	**.69**										
Aptitude Area (AA) Composites																			
11. Clerical (CL)	**.96**	**.90**	**.50**	**.43**	**.64**	**.73**	**.77**	**.72**	**.75**	**.74**									
12. Combat (CO)	**.88**	**.79**	**.51**	**.68**	**.79**	**.81**	**.66**	**.85**	**.70**	**.71**	**.94**								
13. Electronics (EL)	**.90**	**.80**	**.50**	**.67**	**.81**	**.80**	**.63**	**.83**	**.73**	**.75**	**.95**	**1.0**							
14. Field Artillery (FA)	**.89**	**.82**	**.52**	**.65**	**.77**	**.79**	**.68**	**.86**	**.70**	**.71**	**.95**	**1.0**	**.99**						
15. General Maintenance (GM)	**.85**	**.78**	**.50**	**.73**	**.82**	**.81**	**.60**	**.85**	**.68**	**.70**	**.91**	**.99**	**.99**	**.99**					
16. General Technical (GT)	**.96**	**.88**	**.46**	**.42**	**.62**	**.73**	**.62**	**.68**	**.80**	**.81**	**.97**	**.88**	**.91**	**.90**	**.87**				
17. Mech Maintenance (MM)	**.74**	**.67**	**.47**	**.86**	**.84**	**.75**	**.44**	**.85**	**.62**	**.65**	**.81**	**.95**	**.95**	**.94**	**.97**	**.77**			
18. Operators & Food (OF)	**.86**	**.79**	**.50**	**.73**	**.80**	**.80**	**.58**	**.86**	**.70**	**.72**	**.92**	**.99**	**.99**	**.99**	**1.0**	**.89**	**.97**		
19. Signal Communications (SC)	**.92**	**.82**	**.51**	**.60**	**.78**	**.78**	**.70**	**.81**	**.73**	**.75**	**.97**	**.99**	**.99**	**.99**	**.98**	**.93**	**.92**	**.98**	
20. Skilled Technical (ST)	**.94**	**.83**	**.51**	**.59**	**.75**	**.81**	**.68**	**.82**	**.76**	**.78**	**.97**	**.99**	**.99**	**.99**	**.97**	**.95**	**.91**	**.98**	**1.0**

Note. Results are limited to the Applicant Sample (non-prior service, Education Tier 1 and 2, AFQT Category IV and above) with valid TAPAS score data, n = 286,365-297,193. All correlations are statistically significant, $p < .01$ (two-tailed).

Table A.12. ***Correlations among AFQT, ASVAB Subtests, and Aptitude Area (AA) Composite Scores by Education Tier***

Composite/Subtest		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1.	AFQT		.82	.45	.37	.59	.72	.72	.64	.79	.80	.97	.88	.90	.89	.85	.96	.75	.87	.93	.94
	ASVAB Subtests																				
2.	Arithmetic Reasoning (AR)	.77		.47	.31	.46	.53	.68	.58	.53	.47	.90	.79	.80	.81	.78	.88	.67	.79	.82	.83
3.	Assembling Objects (AO)	.40	.42		.27	.35	.36	.38	.51	.34	.28	.50	.51	.50	.52	.50	.46	.46	.50	.51	.51
4.	Auto & Shop Info (AS)	.31	.25	.23		.66	.50	.08	.61	.34	.41	.43	.67	.67	.65	.73	.42	.86	.72	.60	.59
5.	Electronics Information (EI)	.53	.37	.31	.64		.67	.28	.67	.52	.58	.63	.78	.80	.76	.81	.61	.83	.79	.77	.74
6.	General Science (GS)	.67	.43	.30	.46	.64		.41	.65	.62	.71	.72	.80	.79	.79	.80	.72	.74	.79	.77	.80
7.	Math Knowledge (MK)	.65	.62	.32	.00	.19	.31		.40	.41	.33	.77	.67	.64	.68	.60	.62	.45	.59	.70	.68
8.	Mech Comprehension (MC)	.58	.51	.47	.59	.62	.60	.30		.53	.54	.71	.85	.82	.85	.84	.67	.85	.85	.80	.81
9.	Para Comprehension (PC)	.75	.45	.29	.28	.44	.54	.30	.45		.68	.74	.68	.72	.69	.67	.79	.61	.69	.72	.75
10.	Word Knowledge (WK)	.76	.35	.23	.35	.54	.66	.20	.48	.60		.73	.70	.74	.70	.69	.81	.65	.71	.74	.77
	Aptitude Area (AA) Composites																				
11.	Clerical (CL)	.95	.87	.46	.39	.58	.66	.71	.67	.68	.67		.94	.95	.95	.91	.97	.81	.92	.97	.97
12.	Combat (CO)	.84	.72	.47	.68	.76	.76	.58	.83	.61	.64	.91		.99	1.0	.99	.88	.95	.99	.99	.99
13.	Electronics (EL)	.87	.74	.46	.67	.78	.75	.55	.80	.65	.68	.93	.99		.99	.99	.91	.95	.99	.99	.99
14.	Field Artillery (FA)	.85	.76	.48	.65	.73	.74	.60	.84	.61	.63	.93	1.0	.99		.99	.90	.94	.99	.99	.99
15.	General Maintenance (GM)	.80	.71	.46	.74	.80	.76	.51	.82	.59	.62	.88	.99	.99	.99		.87	.97	1.0	.98	.97
16.	General Technical (GT)	.95	.86	.41	.36	.55	.66	.53	.61	.74	.76	.96	.84	.88	.86	.82		.77	.89	.92	.94
17.	Mech Maintenance (MM)	.68	.59	.42	.87	.81	.68	.34	.83	.52	.57	.76	.95	.94	.93	.97	.71		.97	.92	.91
18.	Operators & Food (OF)	.82	.73	.46	.73	.77	.74	.49	.84	.61	.65	.90	.99	.99	.99	1.0	.85	.97		.98	.98
19.	Signal Communications (SC)	.90	.77	.47	.59	.75	.72	.63	.78	.66	.68	.96	.99	.99	.99	.97	.90	.90	.97		1.0
20.	Skilled Technical (ST)	.92	.78	.47	.57	.72	.76	.59	.79	.69	.72	.96	.98	.99	.99	.97	.92	.89	.97	.99	

Note. Results are limited to the Applicant Sample (non-prior service, Education Tier 1 and 2, AFQT Category IV and above) with valid TAPAS score data. Correlations above the diagonal are for Education Tier 1 applicants, n = 112,261 – 119,234. Correlations below the diagonal are for Education Tier 2 applicants, n = 8,857 – 9,274. All correlations are statistically significant, $p < .01$ (two-tailed).

APPENDIX B

CORRELATIONS AMONG CRITERION MEASURES IN THE IMT AND IN-UNIT VALIDATION SAMPLES

Table B.1. ***Correlations among the Performance Rating Scales (PRS) in the IMT Validation Sample***

Domain/PRS		1	2	3	4	5	6
	Army-Wide						
1.	Adjustment to the Army						
2.	Effort & Personal Discipline	.75					
3.	MOS Qualification Knowledge	.72	.67				
4.	Physical Fitness & Bearing	.67	.70	.59			
5.	Working with Others	.73	.76	.68	.64		
6.	Overall Performance	.59	.60	.56	.54	.56	
	MOS-Specific						
7.	11B/C/X + 18X	.66	.63	.68	.60	.65	.55
8.	19K	.66	.65	.79	.63	.37	.63
9.	31B	.68	.64	.72	.53	.68	.56
10.	68W	.70	.63	.71	.56	.66	.39
11.	88M	.67	.63	.64	.65	.64	.61
12.	All MOS Combined	.68	.63	.70	.57	.65	.51

Note. Army-wide PRS: n = 4,991-5,342. MOS-specific PRS: 11B, n = 1,416-1,419; 19K, n = 83; 31B, n = 1,009-1,014; 68W, n = 635-657; 88M, n = 108-109; All MOS Combined, n = 3,299-3,324. Ratings on PRS range from 1 and 5. PRS ratings from supervisors with a familiarity rating of 1 ("I have had little opportunity to observe this Soldier") were excluded from analyses. All correlations are statistically significant ($p < .05$, one-tailed).

Table B.2***. Correlations among the Performance Rating Scales (PRS) in the In-Unit Validation Sample***

Domain/PRS		1	2	3	4	5
1.	Can Do [a]					
2.	Effort & Personal Discipline [a]	.79				
3.	Physical Fitness & Bearing	.54	.56			
4.	Self-Management [a]	.76	.75	.60		
5.	Working with Others [a]	.79	.79	.53	.75	
6.	Overall Leadership Potential	.67	.67	.61	.67	.63

Note. Army-wide PRS, n = 708-734. Ratings on PRS range from 1 and 7. PRS ratings from supervisors with a familiarity rating of 1 ("I have had little opportunity to observe this Soldier") were excluded from analyses. All correlations are statistically significant ($p < .05$, one-tailed).

[a] Ratings composite comprises two or more Army-wide PRS.

Table B.3. ***Correlations among the Army Life Questionnaire (ALQ) Scales in the IMT and In-Unit Validation Samples***

Domain/Scale	1	2	3	4	5	6	7	8	9	10	11	12
1. Affective Commitment		**.79**	**.40**	**.49**	--	**.61**	**.52**	**-.56**	--	**-.14**	.05	--
2. Army Fit	**.84**		**.42**	**.50**	--	**.62**	**.55**	**-.64**	--	**-.14**	.04	--
3. MOS Fit	**.47**	**.48**		**.54**	--	**.27**	**.18**	**-.31**	--	**-.12**	.01	--
4. MOS Satisfaction	--	--	--		--	**.37**	**.29**	**-.36**	--	**-.10**	.02	--
5. Normative Commitment	**.69**	**.73**	**.41**	--		--	--	--	--	--	--	--
6. Army Career Intentions	**.56**	**.52**	**.25**	--	**.42**		**.78**	**-.50**	--	**-.11**	.06	--
7. Army Reenlistment Intentions	**.53**	**.53**	**.28**	--	**.46**	**.85**		**-.45**	--	**-.09**	**.07**	--
8. Attrition Cognition	**-.63**	**-.69**	**-.41**	--	**-.74**	**-.46**	**-.49**		--	**.24**	**-.09**	--
9. Army Life Adjustment	**.45**	**.61**	**.34**	--	**.46**	**.36**	**.39**	**-.53**		--	--	--
10. Disciplinary Incidents (#)	**-.07**	**-.09**	**-.07**	--	**-.06**	**-.04**	**-.05**	**.10**	**-.16**		-.04	--
11. Last APFT Score	**.03**	**.09**	**.07**	--	**.07**	**.04**	**.04**	**-.11**	**.22**	**-.13**		--
12. Training Achievement	**.05**	**.06**	**.05**	--	.00	**.08**	**.06**	**-.03**	**.12**	**-.07**	**.23**	
13. Training Restart (#)	**-.05**	**-.08**	**-.08**	--	**-.06**	**-.04**	**-.04**	**.10**	**-.19**	**.19**	**-.26**	**-.12**

Note. Correlations below the diagonal reflect the IMT ALQ, n = 15,037-16,835. Correlations above the diagonal reflect the in-unit ALQ, n = 1,008-1,034. Correlations in bold are statistically significant, $p < .01$ (two-tailed).

Table B.4. ***Correlations between the Army Life Questionnaire (ALQ) Scales and Job Knowledge Tests (JKTs) in the IMT and In-Unit Validation Samples***

	IMT/In-Unit JKTs								
Setting/ALQ Scale	WTBD	All MOS Combined	11B	19K	31B	42A	68W	88M	91B
IMT									
Affective Commitment	**.09**	**.03**	**.10**	**.18**	**.06**	.11	.03	.04	**.21**
Army Fit	**.15**	**.07**	**.16**	**.21**	**.07**	.07	**.10**	**.07**	**.21**
MOS Fit	**.13**	**.12**	**.12**	**.18**	**.04**	-.04	**.16**	.00	**.32**
Normative Commitment	**.22**	**.16**	**.22**	**.21**	**.14**	.10	**.17**	**.16**	**.26**
Army Career Intentions	**-.03**	**-.03**	.01	.04	.01	.02	-.02	-.03	.04
Army Reenlistment Intentions	**.03**	**.02**	**.05**	.09	.04	.09	.02	.03	.08
Attrition Cognitions	**-.18**	**-.12**	**-.18**	**-.17**	**-.11**	-.10	**-.15**	**-.11**	**-.18**
Army Life Adjustment	**.13**	**.08**	**.13**	.10	**.12**	.04	**.12**	**.09**	**.14**
Disciplinary Incidents (#)	**-.03**	.01	-.01	.04	**-.08**	-.04	**-.04**	.00	-.03
Last APFT Score	**.07**	**.05**	**.05**	.01	.00	-.05	.01	-.01	-.01
Training Achievement	**-.10**	**-.11**	**-.13**	-.04	**-.06**	-.09	.01	**-.13**	**-.20**
Training Restart (#)	**-.07**	**-.02**	**-.07**	-.07	**-.10**	-.09	**-.06**	**-.08**	.00
In-Unit									
Affective Commitment	**.07**	-.01	.10	--	--	--	--	-.08	--
Army Fit	**.07**	.06	.11	--	--	--	--	.05	--
MOS Fit	**.10**	.02	.08	--	--	--	--	-.18	--
MOS Satisfaction	**-.07**	-.05	.04	--	--	--	--	-.12	--
Army Career Intentions	.02	-.06	.02	--	--	--	--	.02	--
Army Reenlistment Intentions	.03	-.01	.06	--	--	--	--	-.08	--
Attrition Cognitions	**-.11**	**-.10**	-.13	--	--	--	--	**-.29**	--
Disciplinary Incidents (#)	-.05	**-.16**	**-.22**	--	--	--	--	-.19	--
Last APFT Score	.01	-.08	-.10	--	--	--	--	-.01	--

Note. WTBD = Warrior Tasks and Battle Drills. IMT: All MOS Combined, n = 12,095-13,409; 11B, n = 5,289-5,325; 19K, n = 293-301; 31B, n = 2,134-2,525; 42A, n = 243-244; 68W, n = 2,183-2,686; 88M, n = 1,749-2,069; 91B, n = 159-259; WTBD, n = 14,346-15,947. In-Unit: All MOS Combined, n = 361-367; 11B, n = 156-159; 88M, n = 50-52; WTBD, n = 985-1,008. Correlations in bold are statistically significant ($p < .05$, two-tailed).

Table B.5. ***Correlations between the Army Life Questionnaire (ALQ) Scales and Performance Rating Scales (PRS) in the IMT Validation Sample***

Domain/PRS	AFF COM	Army Fit	MOS Fit	NORM COM	CAR INT	RENL INT	ATT COG	AL ADJ	DIS INC	Last APFT	TRN ACH	TRN RES
Army-Wide												
Adjustment to the Army	**.05**	**.07**	**.07**	**.03**	.02	**.03**	**-.06**	**.07**	**-.11**	**.15**	**.10**	**-.05**
Effort & Personal Discipline	**.05**	**.07**	**.07**	**.04**	.01	.03	**-.06**	**.07**	**-.10**	**.15**	**.08**	**-.03**
MOS Qualification Knowledge	**.04**	**.05**	**.06**	**.03**	.01	.02	**-.03**	**.07**	**-.08**	**.12**	**.07**	**-.04**
Physical Fitness & Bearing	**.04**	**.06**	**.06**	**.03**	**.03**	**.04**	**-.06**	**.10**	**-.09**	**.29**	**.14**	**-.10**
Working with Others	**.03**	**.04**	**.05**	**.03**	.02	**.03**	**-.04**	**.05**	**-.06**	**.11**	**.07**	-.02
Overall Performance	**.05**	**.07**	**.06**	**.05**	.02	**.03**	**-.08**	**.12**	**-.13**	**.21**	**.15**	**-.10**
MOS-Specific												
All MOS Combined	**.07**	**.09**	**.08**	**.07**	**.04**	**.05**	**-.09**	**.07**	**-.06**	**.10**	**.06**	-.02
11B	.04	**.05**	**.10**	**.06**	.02	.03	**-.07**	.03	-.04	**.10**	**.05**	-.01
19K	.10	.12	.16	.10	.21	.18	-.17	**.24**	**-.28**	.12	-.07	**-.30**
25B	.02	.06	**.19**	.04	-.09	-.05	.02	.14	-.03	-.02	-.01	-.03
31B	**.10**	**.12**	**.06**	**.07**	**.07**	.06	**-.10**	**.13**	**-.14**	**.07**	**.14**	-.02
68W	**.07**	**.07**	.04	**.08**	**.07**	**.08**	**-.09**	**.09**	-.01	**.07**	-.01	.02
88M	.00	.02	-.06	-.05	-.08	-.08	.14	-.12	-.07	**.19**	-.08	.02

Note. AFF COM = Affective Commitment; NORM COM = Normative Commitment; CAR INT = Army Career Intentions; RENL INT = Army Reenlistment Intentions; ATT COG = Attrition Cognitions; AL ADJ = Army Life Adjustment; DIS INC = Disciplinary Incidents (# of); Last APFT = Last APFT Score; TRN ACH = Training Achievements (# of); TRN RES = Training Restart (# of). Army-wide PRS: n = 4,510-5,222. MOS-specific PRS: All MOS Combined, n = 3,161-3,520; 11B, n = 1,446-1,457; 19K, n = 81-83; 25B, n = 183-185; 31B, n= 929-1,053; 68W, n = 584-772; 88M, n = 88-114. Correlations in bold are statistically significant ($p < .05$, two-tailed).

Table B.6. ***Correlations between the Army Life Questionnaire (ALQ) Scales and Performance Rating Scales (PRS) in the In-Unit Validation Sample***

	In-Unit ALQ Scale								
Domain/PRS	AFF COM	Army Fit	MOS Fit	MOS SAT	CAR INT	RENL INT	ATT COG	DIS INC	Last APFT
Army-Wide									
Can Do [a]	.06	.04	.01	-.07	.04	**.08**	**-.08**	**-.20**	**.11**
Effort & Personal Discipline [a]	.07	.06	.04	-.05	.02	.03	**-.08**	**-.27**	**.12**
Physical Fitness & Bearing	.03	.05	.00	-.02	.03	.03	**-.10**	**-.20**	**.36**
Self-Management [a]	**.09**	.07	.03	-.03	.07	.06	**-.13**	**-.30**	**.12**
Working with Others [a]	.04	.03	.04	-.04	.03	.04	**-.08**	**-.23**	**.10**
Overall Leadership Potential	**.11**	**.11**	.03	.01	.06	.06	**-.14**	**-.26**	**.19**

Note. AFFCOM = Affective Commitment; MOS SAT = MOS Satisfaction; CAR INT = Army Career Intentions; RENL INT = Army Reenlistment Intentions; ATT COG = Attrition Cognitions; DIS INC = Disciplinary Incidents (# of); Last APFT = Last APFT Score. Army-wide PRS, n = 686-725. Correlations in bold are statistically significant ($p <$ .05, two-tailed).

[a] Ratings composite comprises two or more Army-wide PRS.

Table B.7. ***Correlations between the Job Knowledge Tests (JKTs) and Performance Rating Scales (PRS) in the IMT Validation Sample***

	IMT JKT							
Domain/PRS	All MOS Combined	11B	19K	31B	42A	68W	88M	WTBD
Army-Wide								
Adjustment to the Army	.01	**.05**	**.31**	.04	**.26**	-.05	**.27**	**.06**
Effort & Personal Discipline	**.05**	.05	**.27**	.04	**.29**	-.01	**.26**	**.08**
MOS Qualification Knowledge	**.04**	**.07**	**.31**	.04	**.37**	-.02	.10	**.07**
Physical Fitness & Bearing	**.03**	**.07**	**.27**	.03	**.22**	-.03	**.22**	**.06**
Working with Others	.03	.04	-.02	.02	.19	-.03	**.24**	**.06**
Overall Performance	**.06**	**.11**	**.31**	**.06**	**.34**	-.01	.19	**.07**
MOS-Specific								
All MOS Combined	.00	**.07**	**.36**	-.02	--	-.03	.12	**.11**
11B	**.07**	**.07**	--	--	--	--	--	**.14**
19K	**.36**	--	**.36**	--	--	--	--	**.39**
25B	--	--	--	--	--	--	--	**.20**
31B	-.02	--	--	-.02	--	--	--	**.06**
68W	-.03	--	--	--	--	-.03	--	.04
88M	.12	--	--	--	--	--	.12	.07

Note. WTBD = Warrior Tasks and Battle Drills. Army-wide PRS: All MOS Combined, *n* = 4,162-4,455; 11B, *n* = 1,430-1,433; 19K, *n* = 90-94; 31B, *n* = 1,083-1,087; 42A, *n* = 99; 68W, *n* = 1,322-1,603; 88M, n = 93-97; WTBD, *n* = 4,717-5,039. MOS-specific PRS: All MOS Combined, *n* = 68-3,015; 11B, *n* = 1,189; 19K, *n* = 68; 31B, *n*= 973; 68W, *n* = 671; 88M, *n* = 85; WTDB, *n* = 78-3,399. Correlations in bold are statistically significant ($p < .05$, two-tailed).

Table B.8. ***Correlations between the Job Knowledge Tests (JKTs) and Performance Rating Scales (PRS) in the In-Unit Validation Sample***

	In-Unit JKT								
Domain/PRS	All MOS Combined	11B	19K	31B	42A	68W	88M	91B	WTBD
Can Do [a]	**.14**	**.20**	--	--	--	--	--	--	**.09**
Effort & Personal Discipline [a]	**.13**	.06	--	--	--	--	--	--	**.09**
Physical Fitness & Bearing	.06	.07	--	--	--	--	--	--	.03
Self-Management [a]	.08	.09	--	--	--	--	--	--	**.07**
Working with Others [a]	**.16**	.11	--	--	--	--	--	--	**.11**
Overall Leadership Potential	.11	.15	--	--	--	--	--	--	.05

Note. WTBD = Warrior Tasks and Battle Drills. Army-wide PRS: All MOS Combined, *n* = 250-259; 11B, *n* = 110-113; WTDB, *n* = 690-713. Correlations in bold are statistically significant ($p < .05$, two-tailed).
[a] Ratings composite comprises two or more Army-wide PRS.

Table B.9. ***Correlations between the Job Knowledge Tests (JKTs) and Administrative Criteria in the IMT Validation Sample***

		IMT JKT							
Domain/Measure	All MOS Combined	11B	19K	31B	42A	68W	88M	91B	WTBD
Attrition									
3-Month Cumulative	**-.06**	-.01	.07	**-.05**	-.12	-.01	-.04	-.11	**-.04**
6-Month Cumulative	**-.06**	.01	.03	**-.05**	-.12	.02	**-.05**	-.11	**-.04**
9-Month Cumulative	**-.02**	**.03**	.03	-.03	-.07	.04	-.04	-.11	**-.03**
12-Month Cumulative	-.01	**.04**	-.08	**.05**	**-.19**	**.05**	-.04	-.11	**-.02**
15-Month Cumulative	.01	**.06**	-.03	**.06**	**-.19**	**.07**	-.03	-.12	**-.03**
18-Month Cumulative	.01	**.06**	-.03	**.07**	**-.19**	**.06**	.02	-.12	**-.02**
21-Month Cumulative	**.03**	**.07**	-.03	**.08**	**-.19**	**.06**	.04	-.11	**.03**
24-Month Cumulative	.02	**.05**	**.25**	**.06**	**-.19**	**.07**	**.05**	-.08	.01
27-Month Cumulative	**.04**	**.03**	**.25**	**.06**	**-.19**	**.08**	.04	.11	**.03**
30-Month Cumulative	**.05**	.01	**.25**	**.06**	**-.19**	**.07**	.02	.12	**.03**
Training Restart									
Restarted at Least Once During IMT	**-.05**	.02	-.07	.02	.09	-.04	.00	-.05	.00
Academic or Pejorative Restart	-.01	.02	-.07	.01	.09	.02	.00	-.05	.01
Academic Restart	**-.05**	.01	-.07	.02	.09	-.04	.00	-.05	.00
Final AIT School Grades									
Overall Average (Unstandardized)	-.05	--	--	--	--	.17	--	--	**.32**
Overall Average (Standardized)	**.27**	--	--	--	--	**.30**	--	--	**.35**

Note. WTBD = Warrior Tasks and Battle Drills. Attrition: All MOS Combined, n = 13,031; 11B, n = 5,200; 19K, n = 280; 31B, n= 2,452; 42A, n = 216; 68W, n = 2,632; 88M, n = 1,997; 91B, n = 254; WTBD, n = 15,520. Attrition Reasons: All MOS Combined, n = 11,676-11,828; 11B, n = 4,729-4,830; 19K, n = 219; 31B, n = 2,153-2,162; 68W, n = 2,477-2,492; 88M, n = 1,711-1,726; 91B, n = 235-240; WTDB, n = 13,935-14,122. Training Restart: All MOS Combined, n = 9,324-9,457; 11B, n = 3,850-3,865; 19K, n = 104; 31B, n = 1,804-1,815; 42A, n = 85; 68W, n = 1,668-1,748; 88M, n = 1,550-1,593; 91B, n = 242-247; WTBD, n = 11,096-11,254. Final AIT School Grade: All MOS Combined, n = 98-99; 68W, n = 61; WTBD, n = 250-252. Correlations in bold are statistically significant ($p < .05$, two-tailed).

Table B.10. ***Correlations between the Army Life Questionnaire (ALQ) and Administrative Criteria in the IMT Validation Sample***

Domain/Measure	IMT ALQ Scale												
	AFF COM	Army Fit	MOS Fit	NORM COM	CAR INT	RENL INT	ATT COG	AC COM	AL ADJ	DIS INC	Last APFT	TRN ACH	TRN RES
Attrition													
3-Month Cumulative	.00	-.01	**.12**	**.02**	.01	.00	**-.02**	**.07**	**-.03**	**-.02**	**-.04**	**.02**	**-.02**
6-Month Cumulative	.00	-.01	**.11**	**.02**	.00	-.01	-.01	**.07**	**-.03**	**-.03**	**-.04**	**.03**	**-.02**
9-Month Cumulative	-.01	-.01	**.08**	.01	**-.02**	**-.03**	.00	**.05**	**-.04**	**-.03**	**-.04**	**.02**	-.01
12-Month Cumulative	-.01	**-.02**	**.07**	.01	**-.02**	**-.03**	.00	**.04**	**-.03**	**-.03**	**-.05**	**.03**	**-.02**
15-Month Cumulative	**-.02**	**-.02**	**.06**	.00	**-.02**	**-.03**	.00	**.02**	**-.02**	**-.03**	**-.04**	**.03**	**-.02**
18-Month Cumulative	**-.03**	**-.03**	**.06**	-.01	**-.03**	**-.03**	.01	.01	**-.03**	**-.03**	**-.04**	**.02**	**-.02**
21-Month Cumulative	**-.05**	**-.04**	**.04**	-.01	**-.04**	**-.05**	**.02**	.00	**-.04**	-.01	**-.04**	.01	**-.02**
24-Month Cumulative	**-.04**	**-.04**	**.04**	-.01	**-.03**	**-.04**	.01	.01	**-.03**	-.01	**-.04**	.01	**-.02**
27-Month Cumulative	-.01	-.01	**.05**	**.02**	-.01	**-.02**	-.01	**.03**	-.01	-.01	**-.03**	.01	-.01
30-Month Cumulative	**-.02**	**-.03**	**.05**	.01	-.01	**-.02**	.00	.00	**-.02**	**-.02**	**-.02**	.01	**-.02**
Training Restart													
Restarted at Least Once During IMT	.01	.01	.01	.01	.01	.01	**-.04**	**.03**	**.03**	**-.08**	**.08**	**-.02**	**-.20**
Academic or Pejorative Restart	.00	**.02**	**.02**	.02	.00	.00	**-.04**	.01	**.04**	**-.09**	**.09**	**.03**	**-.22**
Academic Restart	.00	.00	.00	.00	.00	.00	-.01	**.02**	.01	**-.07**	**.06**	**-.03**	**-.20**
Final AIT School Grades													
Overall Average (Unstandardized)	-.03	.02	.07	.04	-.05	-.07	-.02	-.08	-.02	.07	-.07	.09	.04
Overall Average (Standardized)	-.08	-.01	.12	.02	-.09	-.06	-.04	**-.16**	.04	.04	-.12	.01	.05

Note. AFF COM = Affective Commitment; NORM COM = Normative Commitment; CAR INT = Army Career Intentions; RENL INT = Army Reenlistment Intentions; ATT COG = Attrition Cognitions; AC COM = Army Civilian Comparison; AL ADJ = Army Life Adjustment; DIS INC = Disciplinary Incidents (# of); Last APFT = Last APFT Score; TRN ACH = Training Achievements (# of); TRN RES = Training Restart (# of). Attrition: n = 14,651-16,243. Attrition Reason: n = 13,109-14,781. Training Restart: n = 10,464-11,786. Final AIT School Grade: n = 157-265. Correlations in bold are statistically significant ($p < .05$, two-tailed).

Table B.11. ***Correlations between the Performance Rating Scales (PRS) and Attrition in the IMT Validation Sample***

Domain/PRS	*Attrition*									
	3-Month	6-Month	9-Month	12-Month	15-Month	18-Month	21-Month	24-Month	27-Month	30-Month
Army-Wide										
Adjustment to the Army	.01	**-.03**	**-.06**	**-.09**	**-.11**	**-.11**	**-.09**	**-.10**	**-.09**	**-.08**
Effort & Discipline	-.01	**-.05**	**-.08**	**-.13**	**-.15**	**-.14**	**-.11**	**-.10**	**-.11**	**-.08**
MOS Qualification Knowledge & Skill	-.01	**-.04**	**-.06**	**-.10**	**-.12**	**-.11**	**-.08**	**-.09**	**-.09**	**-.07**
Physical Fitness & Bearing	.01	-.02	**-.05**	**-.10**	**-.12**	**-.11**	**-.09**	**-.10**	**-.10**	**-.08**
Working with Others	.00	**-.05**	**-.10**	**-.16**	**-.19**	**-.18**	**-.13**	**-.12**	**-.12**	**-.10**
Overall Performance	.00	-.02	.01	-.01	.01	.01	.02	-.01	-.01	-.01
MOS-Specific										
All MOS Combined	.00	-.01	**-.06**	**-.14**	**-.16**	**-.17**	**-.12**	**-.12**	**-.11**	**-.09**
(11B/C/X and 18X)	.02	.02	**-.07**	**-.13**	**-.14**	**-.14**	-.02	-.04	-.05	-.03
19K	-.11	-.11	-.11	**-.29**	**-.37**	**-.37**	**-.37**	-.11	-.11	-.11
25B	-.10	-.10	-.11	-.10	-.10	-.10	-.10	-.10	-.10	-.10
31B	-.01	.00	-.03	**-.08**	**-.10**	**-.16**	**-.11**	**-.17**	**-.10**	-.05
68W	.01	-.06	**-.08**	**-.24**	**-.25**	**-.24**	**-.23**	**-.23**	**-.21**	**-.15**
88M	**.19**	**.19**	**.19**	**.21**	**.20**	**.19**	**.19**	**.28**	**.25**	.15

Note. Army-wide PRS: Attrition, n = 4,853-5,177; Attrition Reason, n = 4,393-4,751. MOS-specific PRS: Attrition, n = 85-3,507; Attrition Reason, n = 70-3,248. Correlations in bold are statistically significant ($p < .05$, two-tailed).

Table B.12. ***Correlations between the Performance Rating Scales (PRS) and Administrative Criteria in the IMT Validation Sample***

	Training Restart		
Domain/PRS	IMT Restart	PEJ Restart	ACAD Restart
Army-Wide (IMT)			
Adjustment to the Army	**.05**	**.05**	**.04**
Effort & Discipline	.00	.01	-.01
MOS Qualification Knowledge & Skill	.01	.02	.01
Physical Fitness & Bearing	.02	**.04**	.00
Working with Others	.00	.00	-.01
Overall Performance	.03	**.05**	.01
MOS-Specific (IMT)			
All MOS Combined	.00	.01	.00
11B	-.02	-.02	-.02
25B	.13	.13	.01
31B	.05	.05	.03
68W	-.03	-.04	-.03
88M	**-.22**	.06	**-.22**

Note. IMT Restart = Restarted at Least Once During IMT; PEJ Restart = Restarted at Least Once for Academic or Other Pejorative Reason; ACAD Restart = Restarted at Least Once for Academic Reasons Army-wide PRS: Training Restart, n = 3,684-3,929. MOS-Specific PRS: Training Restart, n = 67-2,825; Final AIT Grade, n = 141-143. Correlations in bold are statistically significant ($p < .05$, two-tailed).

Table B.13. ***Correlations among Criterion Composites in the IMT and In-Unit Validation Samples***

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	IMT: Overall Performance														
2	IMT: Physical Fitness	**.19**													
3	IMT: Commitment & Fit	**.07**	**.08**												
4	IMT: Retention Cognitions	.01	.01	**.36**											
5	IMT: Knowledge & Skill	**.08**	**.05**	**.15**	**-.05**										
6	IMT: Training Restart (Y/N)	**-.05**	**-.24**	**-.07**	-.01	**-.06**									
7	IMT: Disciplinary Incidents (Y/N)	**-.10**	**-.16**	**-.07**	**-.04**	-.02	**.18**								
8	IMT: Army Life Adjustment	**.09**	**.22**	**.55**	**.26**	**.13**	**-.17**	**-.16**							
9	IU: Overall Performance	--	.15	-.06	-.13	.10	**-.11**	**-.22**	-.01						
10	IU: Physical Fitness	.06	**.57**	.03	.10	.01	**-.09**	.02	.07	**.19**					
11	IU: Commitment & Fit	.00	.00	**.46**	**.21**	.07	**-.07**	-.15	**.30**	.06	.06				
12	IU: Retention Cognitions	.15	-.01	**.27**	**.49**	-.01	-.05	-.07	**.18**	.01	.04	**.42**			
13	IU: Knowledge & Skill	-.13	.08	**.24**	-.14	**.50**	.00	.02	.07	**.12**	-.01	**.09**	-.01		
14	IU: Leadership Potential	--	**.20**	.02	-.11	.14	**-.14**	**-.33**	.07	**.75**	.19	**.09**	.01	.07	
15	IU: Disciplinary Incidents (Y/N)	.09	-.14	.00	.12	-.09	-.01	.12	-.06	**-.23**	**-.09**	**-.15**	-.05	-.05	**-.26**

Note. Bolded values indicated correlation is significant at the 0.05 level (2-tailed). Statistics based on fewer than 50 cases are not reported. Will-Do includes the performance ratings scales, APFT, the ALQ scales, training achievement, Training Restarts, and disciplinary incidents. Sample sizes range from 46-15,294.

APPENDIX C

CRITERION PSYCHOMETRIC PROPERTIES IN THE FULL IMT AND IN-UNIT SAMPLES

Table C.1. ***Descriptive Statistics and Reliability Estimates for the Job Knowledge Tests (JKTs) in the Full IMT and In-Unit Samples***

Domain/Setting/JKT	*n*	*M*	*SD*	*Min*	*Max*	r_{WTBD}	*α*
			IMT				
MOS-Specific							
11B/C/X + 18X	14,384	61.20	10.15	20.93	88.37	.55	.78
19K	534	61.88	11.67	20.29	85.71	.46	.73
31B	6,845	68.29	8.54	34.95	93.20	.50	.77
42A	360	56.50	12.35	25.93	81.48	.50	.75
68W	8,620	73.39	10.34	25.00	96.74	.49	.87
88M	5,786	63.77	10.60	30.56	94.44	.54	.77
91B	1,187	57.34	13.47	23.71	90.72	.47	.90
All MOS Combined	37,716	65.51	11.38	20.29	96.74	.54	
WTBD (Army-Wide)	45,911	64.81	12.55	6.45	100.00	--	.65
			In-Unit				
MOS-Specific							
11B/C/X + 18X	612	63.19	9.86	26.76	84.51	.57	.71
19K	59	75.63	11.82	37.25	90.74	.45	.82
31B	81	62.29	11.37	33.64	81.31	.59	.88
42A	45	51.92	5.90	38.82	64.71	.16	--
68W	147	72.26	8.44	48.11	90.57	.49	.65
88M	197	64.16	9.70	40.43	87.23	.59	.79
91B	177	61.92	11.78	35.09	85.26	.29	.81
All MOS Combined	1,318	64.29	10.97	26.76	90.74	.50	
WTBD (Army-Wide)	3,679	65.21	12.47	15.38	100.00	--	.59

Note. *M*, *SD*, Min, and Max are based on percent correct; α = coefficient alpha. WTBD = Warrior Tasks and Battle Drills. r_{WTBD} = correlation with WTBD JKT scores. All correlations are statistically significant ($p < .05$).

Table C.2. ***Descriptive Statistics and Reliability Estimates for the Performance Rating Scales (PRS) in the Full IMT and In-Unit Samples***

Domain/Setting/PRS	*n*	*M*	*SD*	*Min*	*Max*	*α*	*IRR*
			IMT				
Army-Wide							
Adjustment to the Army	16,174	3.25	1.02	1.00	5.00	--	.15
Effort & Personal Discipline	16,202	3.05	.99	1.00	5.00	--	.18
MOS Qualification Knowledge	14,699	3.20	.96	1.00	5.00	--	.10
Physical Fitness & Bearing	16,103	3.10	1.01	1.00	5.00	--	.19
Working with Others	16,145	3.02	.99	1.00	5.00	--	.15
Overall Performance	15,960	3.51	.84	1.00	5.00	--	.31
MOS-Specific							
11B/C/X + 18X	4,919	2.99	.81	1.00	5.00	.96	.17
19K	194	3.28	.56	1.57	4.86	.91	.41
31B	2,601	3.20	.78	1.00	5.00	.97	.10
68W	3,465	2.71	.77	1.00	5.00	.95	.01
88M	673	2.87	.76	1.20	5.00	.93	.00
91B	255	2.97	1.90	1.00	5.00	.97	.11
All MOS Combined	12,070	2.95	.81	1.00	5.00		
			In-Unit				
Army-Wide							
Can Do [a]	2,690	4.89	1.27	1.00	7.00	.84	--
Effort & Personal Discipline [a]	2,688	5.21	1.37	1.00	7.00	--	--
Physical Fitness & Bearing	2,678	5.26	1.58	1.00	7.00	--	--
Self-Management [a]	2,682	5.30	1.14	1.00	7.00	--	--
Working with Others [a]	2,689	5.29	1.22	1.00	7.00	.75	--
Overall Leadership Potential	2,637	4.76	1.67	1.00	7.00	--	--

Note. Ratings on IMT PRS range from 1 and 5, except for the Overall Performance PRS, which ranges from 1 to 5. PRS ratings from supervisors with a familiarity rating of 1 ("I have had little opportunity to observe this Soldier") were excluded from analyses. α = coefficient alpha. IRR = Interrater reliability, estimated using G(q,k) (Putka, Le, McCloy, & Diaz, 2008). IRR estimates were not estimated if 30 or fewer Soldiers were rated by more than one supervisor.

Table C.3. ***Descriptive Statistics and Reliability Estimates for the Army Life Questionnaire (ALQ) in the Full IMT and In-Unit Samples***

Domain/Setting/Scale	*n*	*M*	*SD*	*Min*	*Max*	*α*
		IMT				
Affective Commitment	47,913	3.89	.68	1.00	5.00	.86
Army Fit	47,913	4.08	.60	1.00	5.00	.86
MOS Fit	47,913	3.78	.85	1.00	5.00	.93
Normative Commitment	47,913	4.17	.70	1.00	5.00	.79
Army Career Intentions	47,913	3.19	1.10	1.00	5.00	.91
Army Reenlistment Intentions	47,913	3.48	.96	1.00	5.00	.83
Attrition Cognition	47,913	1.52	.61	1.00	5.00	.77
Army Life Adjustment	47,913	4.08	.66	1.00	5.00	.87
Disciplinary Incidents (#)	35,668	.27	.62	.00	7.00	--
Last APFT Score	47,418	250.59	31.89	10.00	300.00	--
Training Achievement	47,870	.40	.61	.00	2.00	--
Training Restart (#)	47,911	.40	.64	.00	4.00	--
		In-Unit				
Affective Commitment	3,730	3.61	.80	1.00	5.00	.89
Army Fit	3,730	3.90	.71	1.00	5.00	.81
MOS Fit	3,730	3.24	.95	1.00	5.00	.93
MOS Satisfaction	3,730	3.53	.91	1.00	5.00	.93
Army Career Intentions	3,730	2.67	1.19	1.00	5.00	.93
Army Reenlistment Intentions	3,729	3.07	1.17	1.00	5.00	.79
Attrition Cognition	3,730	1.70	.74	1.00	5.00	.77
Disciplinary Incidents (#)	3,730	.39	.90	.00	7.00	--
Last APFT Score	3,640	245.36	33.50	1.00	300.00	--

Note. α = coefficient alpha.

Table C.4. ***Correlations among the Performance Rating Scales (PRS) in the Full IMT Sample***

Domain/PRS	1	2	3	4	5	6
Army-Wide						
1. Adjustment to the Army						
2. Effort & Personal Discipline	.77					
3. MOS Qualification Knowledge	.71	.68				
4. Physical Fitness & Bearing	.69	.71	.62			
5. Working with Others	.74	.75	.70	.66		
6. Overall Performance	.56	.57	.53	.54	.54	
MOS-Specific						
7. 11B/C/X + 18X	.67	.64	.70	.61	.66	.53
8. 19K	.66	.68	.76	.61	.42	.58
9. 31B	.64	.63	.69	.53	.65	.56
10. 68W	.55	.50	.61	.46	.56	.33
11. 88M	.59	.54	.64	.55	.57	.50
12. 91B	.72	.67	.80	.67	.73	.58
13. All MOS Combined	.64	.60	.68	.56	.63	.48

Note. Army-wide PRS: n = 14,612-16,202. MOS-specific PRS: 11B, n = 4,527-4,533; 19K, n = 185; 31B, n = 2,446-2,462; 68W, n = 2,071-2,608; 88M, n = 608-625; 91B, n = 227-246; All MOS Combined, n = 10,082-10,626. Ratings on PRS range from 1 and 5. PRS ratings from supervisors with a familiarity rating of 1 ("I have had little opportunity to observe this Soldier") were excluded from analyses. All correlations are statistically significant ($p < .05$, one-tailed).

Table C.5. ***Correlations among Performance Rating Scales (PRS) in the Full In-Unit Sample***

Domain/PRS	1	2	3	4	5
1. Can Do [a]					
2. Effort & Personal Discipline [a]	.78				
3. Physical Fitness & Bearing	.58	.61			
4. Self-Management [a]	.76	.75	.61		
5. Working with Others [a]	.78	.77	.58	.75	
6. Overall Leadership Potential	.68	.70	.61	.67	.64

Note. Army-wide PRS, n = 2,625-2,690. Ratings on PRS range from 1 to 7. PRS ratings from supervisors with a familiarity rating of 1 ("I have had little opportunity to observe this Soldier") were excluded from analyses. All correlations are statistically significant ($p < .05$, one-tailed).

[a] Ratings composite comprises two or more Army-wide PRS.

Table C.6. ***Correlations among Army Life Questionnaire (ALQ) Scales in the Full IMT and In-Unit Samples***

Domain/Scale	1	2	3	4	5	6	7	8	9	10	11	12
1. Affective Commitment		**.78**	**.39**	**.51**	--	**.60**	**.53**	**-.58**	--	**-.15**	**.06**	--
2. Army Fit	**.84**		**.42**	**.53**	--	**.59**	**.56**	**-.66**	--	**-.20**	**.09**	--
3. MOS Fit	**.48**	**.48**		**.56**	--	**.24**	**.18**	**-.31**	--	**-.12**	.03	--
4. MOS Satisfaction	--	--	--		--	**.35**	**.28**	**-.38**	--	**-.14**	.03	--
5. Normative Commitment	**.69**	**.71**	**.41**	--		--	--	--	--	--	--	--
6. Army Career Intentions	**.56**	**.54**	**.25**	--	**.43**		**.79**	**-.49**	--	**-.11**	**.05**	--
7. Army Reenlistment Intentions	**.54**	**.54**	**.28**	--	**.46**	**.85**		**-.44**	--	**-.08**	**.05**	--
8. Attrition Cognition	**-.63**	**-.69**	**-.41**	--	**-.74**	**-.47**	**-.50**		--	**.23**	**-.12**	--
9. Army Life Adjustment	**.45**	**.61**	**.35**	--	**.45**	**.36**	**.40**	**-.53**		--	--	--
10. Disciplinary Incidents (#)	**-.07**	**-.10**	**-.08**	--	**-.07**	**-.04**	**-.05**	**.11**	**-.17**		**-.04**	--
11. Last APFT Score	**.05**	**.10**	**.07**	--	**.07**	**.03**	**.04**	**-.12**	**.24**	**-.14**		--
12. Training Achievement	**.06**	**.07**	**.05**	--	.00	**.09**	**.07**	**-.04**	**.13**	**-.07**	**.23**	
13. Training Restart (#)	**-.06**	**-.09**	**-.08**	--	**-.07**	**-.03**	**-.04**	**.11**	**-.20**	**.20**	**-.27**	**-.12**

Note. Correlations below the diagonal are based on the Full IMT sample, n = 35,336 - 47,913. Correlations above the diagonal are based on the Full In-Unit sample, n = 3,639 - 3,730. Correlations in bold are statistically significant ($p < .05$, two-tailed).

APPENDIX D

SUMMARY OF BIVARIATE CORRELATIONS BETWEEN TAPAS SCALES AND SELECTED CRITERIA

Table D.1. ***Summary of the Bivariate Correlations between AFQT, TAPAS, and Selected IMT Criteria for Tier 1 Soldiers***

	WTBD JKT	MOS-Specific JKT	Final AIT Grade	Effort & Personal Discipline (PRS)	Disciplinary Incidents (ALQ)	Training Restart (ALQ)	Last APFT Score (ALQ)	Army Life Adjustment (PRS)	Army Life Adjustment (ALQ)	Army Fit (ALQ)
AFQT	**.37**	**.37**	**.29**	**.09**	**-.02**	.00	**.09**	**.04**	**.07**	**-.04**
Individual TAPAS Scales										
Achievement	**.03**	**.04**	**.07**	**.07**	**-.07**	**.01**	**.09**	**.06**	**.14**	**.12**
Adjustment	**.05**	**.06**	.00	**-.03**	**-.02**	**-.01**	.01	-.01	**.09**	**.02**
Adventure Seeking [a]	**.09**	.05	.03	.06	-.03	.01	**.06**	-.03	.05	.00
Attention Seeking	.01	.00	.00	.01	-.01	**.01**	**.07**	.01	**.07**	**.03**
Commitment to Serve [a]	-.06	-.01	-.02	-.02	.03	-.03	-.04	-.02	**.14**	**.18**
Cooperation	-.01	-.01	.00	-.01	.00	.01	-.01	.00	.00	.01
Courage [a]	**.06**	.05	.01	-.09	-.05	-.03	**.10**	.00	**.15**	**.14**
Dominance	**.04**	.01	**.04**	**.04**	**-.05**	**.01**	**.12**	**.04**	**.13**	**.10**
Even Tempered	**.04**	**.03**	**.02**	.01	-.02	-.01	**-.05**	.00	**.03**	**.02**
Intellectual Efficiency	**.16**	**.16**	**.11**	.02	**-.02**	**-.02**	**.03**	.01	**.11**	**.03**
Non-Delinquency	.00	-.02	**.02**	.00	**-.03**	.00	**-.04**	-.01	.01	**.05**
Optimism	-.01	.00	.01	**.03**	**-.04**	**.01**	**.04**	**.04**	**.10**	**.06**
Order	**-.07**	**-.06**	**-.02**	.01	-.01	.00	**.03**	-.01	.00	.01
Physical Conditioning	.01	-.02	.00	**.07**	**-.11**	**.05**	**.28**	**.07**	**.13**	**.04**
Responsibility [a]	-.01	.04	**.06**	.07	-.04	.00	.03	.03	**.08**	.04
Self-Control	.01	.01	**.02**	.02	**-.02**	**-.01**	.00	.01	**.03**	**.04**
Selflessness	**-.02**	**-.04**	-.01	-.01	.01	**-.01**	-.01	-.01	-.01	**.05**
Situational Awareness [a]	**.09**	.07	.01	.06	.00	**-.05**	-.02	.01	**.08**	**.08**
Sociability	**-.08**	**-.09**	**-.06**	-.01	.01	.01	**.04**	.00	**.04**	**.04**
Team Orientation [a]	.00	-.05	**-.04**	-.02	-.02	-.03	-.04	-.05	-.02	.03
Tolerance	-.01	-.02	**-.03**	.00	.02	**-.01**	.00	.00	**.02**	**.05**
TOPS Composites (Original)										
Can-Do	**.09**	**.09**	**.09**	**.04**	**-.07**	.00	**.03**	.02	**.15**	**.10**
Will-Do	**.04**	.01	**.04**	**.07**	**-.09**	**.02**	**.09**	**.05**	**.10**	**.09**
TOPS Composites (Revised)										
Can-Do	**.20**	**.21**	**.15**	.02	**-.03**	**-.01**	.00	.01	**.09**	.01
Will-Do	**.03**	.01	**.04**	**.09**	**-.12**	**.04**	**.26**	**.09**	**.20**	**.12**
Adaptation	**.09**	**.06**	**.04**	**.06**	**-.09**	**.04**	**.17**	**.05**	**.10**	**.03**

Note. Correlations in bold are statistically significant ($p < .01$, two-tailed).Correlations based on fewer than 50 cases are not reported. Sample sizes range from n = 4,688 - 36,420. JKT = Job Knowledge Test. WTBD = Warrior Tasks and Battle Drills. PRS = Performance Rating Scales. ALQ = Army Life Questionnaire.

[a] Sample sizes for six TAPAS scales were considerably smaller than the other dimensions (n = 279 - 2,985

Table D.2. ***Summary of the Bivariate Correlations between AFQT, TAPAS, and Selected IMT Criteria for Tier 2 Soldiers***

	WTBD JKT	MOS-Specific JKT	Final AIT Grade	Effort & Personal Discipline (PRS)	Disciplinary Incidents (ALQ)	Training Restart (ALQ)	Last APFT Score (ALQ)	Army Life Adjustment (PRS)	Army Life Adjustment (ALQ)	Army Fit (ALQ)
AFQT	**.29**	**.24**	**.26**	.02	-.03	-.03	.06	-.02	.01	-.02
Individual TAPAS Scales										
Achievement	**.09**	.01	**.07**	.03	-.04	.00	**.14**	.00	**.13**	**.10**
Adjustment	.07	.05	**.08**	-.14	.06	.00	.04	-.14	.03	-.01
Adventure Seeking [a]	.05	.12	.00	--	.02	-.02	.17	--	-.02	**-.26**
Attention Seeking	-.04	-.01	-.04	.05	.00	.02	.06	.06	.07	.04
Commitment to Serve [a]	.20	.24	.01	--	.01	**-.14**	.02	--	.17	.14
Cooperation	-.01	-.06	.01	-.03	.03	-.03	-.04	.08	-.05	-.03
Courage [a]	.03	.02	.04	--	.16	-.02	.06	--	.20	.12
Dominance	.03	.00	.01	.03	-.03	-.01	**.17**	.05	**.12**	**.14**
Even Tempered	.04	.03	.05	-.02	.05	-.01	-.05	-.04	.01	-.05
Intellectual Efficiency	.07	.05	**.13**	.04	-.01	-.02	.04	-.05	.08	.08
Non-Delinquency	.07	-.02	.02	-.06	.01	-.01	-.01	-.04	.03	.06
Optimism	-.03	-.07	.01	-.02	.01	-.01	**.08**	.13	**.09**	.06
Order	-.02	-.06	.01	.08	.00	.00	.00	-.02	.06	.03
Physical Conditioning	-.07	-.01	.02	.11	-.05	.01	**.22**	.11	**.11**	.07
Responsibility	.08	.06	.05	--	-.03	**.14**	-.06	--	.14	**.40**
Self-Control	.08	-.04	.03	-.05	-.06	**-.05**	.01	-.04	-.05	.00
Selflessness	-.05	-.01	-.05	.00	.04	-.02	.04	.00	-.07	-.06
Situational Awareness	-.03	-.10	.04	--	-.02	-.06	.00	--	.09	-.15
Sociability	.01	.00	-.04	.00	.01	.01	.08	**.19**	.09	**.12**
Team Orientation [a]	-.09	-.11	.00	--	-.15	-.05	.20	--	**.23**	.22
Tolerance	-.04	-.05	-.04	-.06	-.07	-.01	.08	-.05	.00	.00
TOPS Composites (Original)										
Can-Do	.09	.00	**.11**	-.05	.03	-.02	.09	-.03	**.12**	.09
Will-Do	**.09**	.01	**.08**	.02	-.02	.00	**.11**	.00	**.09**	.07
TOPS Composites (Revised)										
Can-Do	**.10**	.07	**.19**	.03	-.04	-.02	.02	-.10	.03	.05
Will-Do	-.01	-.02	.05	.09	-.06	.00	**.27**	.13	**.18**	**.14**
Adaptation	-.03	.01	.03	.03	-.02	-.01	**.14**	.00	.07	-.02

Note. Correlations in bold are statistically significant ($p < .01$, two-tailed).Correlations based on fewer than 50 cases are not reported. Sample sizes range from $n = 109 – 2,404$

[a] Sample sizes for six TAPAS dimensions were considerably smaller than the other dimensions ($n = 22$ - 229). JKT = Job Knowledge Test. WTBD = Warrior Tasks and Battle Drills. PRS = Performance Rating Scales. ALQ = Army Life Questionnaire.

Table D.3. ***Summary of the Bivariate Correlations between AFQT, TAPAS, and Selected IMT Criteria for Tier 1 + 2 Soldiers***

	WTBD JKT	MOS-Specific JKT	Final AIT Grade	Effort & Personal Discipline (PRS)	Disciplinary Incidents (ALQ)	Training Restart (ALQ)	Last APFT Score (ALQ)	Army Life Adjustment (PRS)	Army Life Adjustment (ALQ)	Army Fit (ALQ)
AFQT	**.37**	**.36**	**.29**	**.08**	**-.02**	.00	**.09**	**.04**	**.07**	**-.04**
Individual TAPAS Scales										
Achievement	**.04**	**.04**	**.07**	**.07**	**-.07**	**.01**	**.09**	**.06**	**.14**	**.12**
Adjustment	**.05**	**.06**	.00	**-.03**	**-.02**	**-.01**	.01	-.01	**.09**	**.02**
Adventure Seeking [a]	**.09**	.05	.02	.08	-.02	.01	**.07**	-.01	.05	-.02
Attention Seeking	.01	.00	.00	.01	-.01	**.01**	**.07**	.01	**.07**	**.03**
Commitment to Serve [a]	-.05	.01	-.02	-.02	.03	-.04	-.04	-.02	**.14**	**.18**
Cooperation	-.01	-.01	.00	-.01	.00	.00	-.01	.01	.00	.00
Courage [a]	**.06**	.05	.02	-.04	-.03	-.03	**.09**	.00	**.16**	**.14**
Dominance	**.03**	.01	**.04**	**.04**	**-.05**	**.01**	**.12**	**.04**	**.13**	**.10**
Even Tempered	**.04**	**.03**	**.02**	.01	-.01	**-.01**	**-.05**	.00	**.03**	.02
Intellectual Efficiency	**.16**	**.16**	**.11**	.02	**-.02**	**-.02**	**.03**	.00	**.11**	**.03**
Non-Delinquency	.00	-.02	**.02**	-.01	**-.03**	.00	**-.04**	-.01	.01	**.05**
Optimism	-.01	-.01	.01	**.03**	**-.04**	**.01**	**.04**	**.04**	**.10**	**.06**
Order	**-.07**	**-.06**	**-.02**	.01	-.01	.00	**.03**	-.01	.00	.01
Physical Conditioning	.00	-.02	.00	**.07**	**-.10**	**.05**	**.28**	**.07**	**.13**	**.04**
Responsibility	.00	.04	**.06**	.07	-.04	.01	.02	.02	**.09**	**.07**
Self-Control	**.02**	.01	**.02**	.02	**-.02**	**-.01**	.00	.01	**.03**	**.04**
Selflessness	**-.02**	**-.04**	**-.01**	-.01	.01	**-.01**	-.01	-.01	-.01	**.04**
Situational Awareness	**.09**	.06	.01	.05	.01	**-.05**	-.02	.01	**.09**	**.07**
Sociability	**-.08**	**-.09**	**-.06**	-.01	.01	.01	**.04**	.00	**.05**	**.04**
Team Orientation [a]	.00	-.05	**-.04**	.02	-.03	-.04	-.02	-.02	.01	.04
Tolerance	-.01	**-.02**	**-.03**	.00	.01	**-.01**	.00	.00	**.02**	**.05**
TOPS Composites (Original)										
Can-Do	**.09**	**.09**	**.09**	**.04**	**-.06**	.00	**.03**	.02	**.15**	**.10**
Will-Do	**.04**	.01	**.04**	**.07**	**-.08**	**.02**	**.09**	**.05**	**.10**	**.09**
TOPS Composites (Revised)										
Can-Do	**.20**	**.20**	**.15**	.02	**-.03**	**-.01**	.00	.01	**.09**	.01
Will-Do	**.02**	.01	**.04**	**.09**	**-.12**	**.04**	**.26**	**.09**	**.20**	**.12**
Adaptation	**.08**	**.06**	**.04**	**.05**	**-.09**	**.03**	**.17**	**.05**	**.10**	**.03**

Note. Correlations in bold are statistically significant ($p < .01$, two-tailed).Correlations based on fewer than 50 cases are not reported. Sample size ranges from n = 4,230 – 66,172
[a] Sample sizes for six TAPAS dimensions were considerably smaller than the other dimensions (n = 301 - 3,192). JKT = Job Knowledge Test. WTBD = Warrior Tasks and Battle Drills. PRS = Performance Rating Scales. ALQ = Army Life Questionnaire.

Table D.4. ***Summary of the Bivariate Correlations between AFQT, TAPAS, and Selected In-Unit Criteria for Tier 1 Soldiers***

	WTBD JKT	Can-Do (PRS)	Effort & Personal Discipline (PRS)	Disciplinary Incidents (ALQ)	Last APFT Score (ALQ)	Working with Others (PRS)	Overall Leadership (PRS)	Affective Commitment (ALQ)	Army Fit (ALQ)	Reenlistment Intention (ALQ)
AFQT	**.37**	**.11**	**.12**	-.02	-.02	**.13**	.07	-.06	-.05	**-.09**
Individual TAPAS Scales										
Achievement	.04	**.11**	**.11**	**-.09**	.03	**.09**	.08	**.08**	**.10**	**.11**
Adjustment	**.07**	.01	.00	-.03	-.01	.00	-.02	.01	.04	.01
Adventure Seeking [a]	--	--	--	--	--	--	--	--	--	--
Attention Seeking	.00	-.01	-.03	.06	-.01	-.06	-.03	-.02	.03	**-.07**
Commitment to Serve [a]	--	--	--	--	--	--	--	--	--	--
Cooperation	-.01	-.05	**-.09**	-.06	-.04	-.06	-.06	.04	.06	.03
Courage [a]	--	--	--	--	--	--	--	--	--	--
Dominance	.03	.05	.03	.00	**.08**	.03	.02	.06	**.08**	.05
Even Tempered	**.10**	.00	-.06	-.04	-.04	.00	-.01	**.07**	**.07**	**.07**
Intellectual Efficiency	**.16**	.06	.03	-.03	.00	.05	-.04	.05	.05	.01
Non-Delinquency	.00	.07	.02	-.05	**-.08**	.05	.04	**.08**	.06	**.07**
Optimism	.00	.02	.01	-.03	.01	.02	.01	.03	**.07**	.03
Order	**-.08**	-.05	-.03	**-.08**	.05	-.01	-.03	.04	.03	.06
Physical Conditioning	.00	.06	.06	-.05	**.26**	**.08**	.07	.00	.00	-.01
Responsibility	--	--	--	--	--	--	--	--	--	--
Self-Control	.04	.02	.04	-.06	.02	.01	.02	**.07**	.04	**.08**
Selflessness	-.06	-.04	-.02	.00	-.04	-.03	-.02	.04	.03	.04
Situational Awareness	--	--	--	--	--	--	--	--	--	--
Sociability	**-.09**	.02	-.02	.03	.04	.00	-.01	.03	.02	.01
Team Orientation [a]	--	--	--	--	--	--	--	--	--	--
Tolerance	-.03	.00	.03	.04	-.01	.04	.02	.03	.05	.02
TOPS Composites (Original)										
Can-Do	**.11**	**.10**	.04	**-.08**	-.02	**.08**	.03	**.11**	**.13**	**.11**
Will-Do	.05	**.11**	.07	**-.11**	**.09**	**.12**	**.09**	**.10**	**.09**	**.14**
TOPS Composites (Revised)										
Can-Do	**.22**	.07	.04	-.03	-.04	.05	-.01	.03	.04	.01
Will-Do	.02	**.11**	**.10**	**-.08**	**.21**	**.10**	**.09**	.06	**.08**	**.07**
Adaptation	**.11**	.06	.04	-.04	**.14**	.07	**.08**	.00	.01	.00

Note. Correlations in bold are statistically significant ($p < .01$, two-tailed).Correlations based on fewer than 50 cases are not reported. Sample sizes range from $n = 640 - 944$

[a] Sample sizes for six TAPAS dimensions were considerably smaller than the other dimensions ($n = 2 - 10$). JKT = Job Knowledge Test. WTBD = Warrior Tasks and Battle Drills. PRS = Performance Rating Scales. ALQ = Army Life Questionnaire.

Table D.5. ***Summary of the Bivariate Correlations between AFQT, TAPAS, and Selected In-Unit Criteria for Tier 1 + 2 Soldiers***

	WTBD JKT	Can-Do (PRS)	Effort & Personal Discipline (PRS)	Disciplinary Incidents (ALQ)	Last APFT Score (ALQ)	Working with Others (PRS)	Overall Leadership (PRS)	Affective Commitment (ALQ)	Army Fit (ALQ)	Reenlistment Intention (ALQ)
AFQT	**.37**	**.10**	**.11**	-.01	-.03	**.12**	.07	**-.06**	-.06	**-.08**
Individual TAPAS Scales										
Achievement	.04	**.11**	**.11**	**-.09**	.03	**.09**	**.08**	**.08**	**.10**	**.11**
Adjustment	**.07**	.02	.00	-.03	.00	.01	-.02	.01	.05	.02
Adventure Seeking [a]	--	--	--	--	--	--	--	--	--	--
Attention Seeking	.00	-.01	-.03	.06	-.01	-.06	-.04	-.01	.04	-.06
Commitment to Serve [a]	--	--	--	--	--	--	--	--	--	--
Cooperation	-.01	-.05	**-.08**	-.05	-.04	-.06	-.06	.04	.05	.03
Courage [a]	--	--	--	--	--	--	--	--	--	--
Dominance	.03	.04	.03	-.01	**.09**	.03	.02	.06	**.08**	.05
Even Tempered	**.10**	.00	-.06	-.04	-.04	.00	-.01	**.07**	**.07**	**.07**
Intellectual Efficiency	**.16**	.05	.03	-.03	.01	.04	-.03	.05	.05	.02
Non-Delinquency	.00	.07	.03	-.04	**-.08**	.06	.04	**.08**	.06	**.07**
Optimism	.00	.02	.01	-.04	.02	.02	.01	.03	**.07**	.03
Order	**-.08**	-.06	-.03	**-.08**	.05	-.02	-.03	.04	.03	.05
Physical Conditioning	-.01	.06	.06	-.06	**.26**	**.08**	.07	.00	.01	.00
Responsibility	--	--	--	--	--	--	--	--	--	--
Self-Control	.04	.02	.05	-.06	.02	.02	.02	**.07**	.04	**.07**
Selflessness	-.05	-.04	-.03	.01	-.04	-.03	-.02	.04	.03	.05
Situational Awareness	--	--	--	--	--	--	--	--	--	--
Sociability	**-.09**	.02	-.02	.02	.04	-.01	-.02	.03	.03	.02
Team Orientation [a]	--	--	--	--	--	--	--	--	--	--
Tolerance	-.02	.00	.02	.04	.00	.04	.01	.04	.05	.03
TOPS Composites (Original)										
Can-Do	**.11**	**.09**	.04	**-.08**	-.02	.07	.03	**.11**	**.13**	**.11**
Will-Do	.05	**.11**	**.08**	**-.11**	**.09**	**.12**	**.09**	**.10**	**.09**	**.13**
TOPS Composites (Revised)										
Can-Do	**.22**	.07	.04	-.03	-.04	.05	.00	.03	.04	.01
Will-Do	.02	**.10**	**.10**	**-.09**	**.21**	**.10**	**.09**	.06	**.09**	**.07**
Adaptation	**.11**	.07	.05	-.04	**.14**	.07	.08	.00	.02	.00

Note. Correlations in bold are statistically significant ($p < .01$, two-tailed).Correlations based on fewer than 50 cases are not reported. Sample sizes range from $n = 650 – 960$. JKT = Job Knowledge Test. WTBD = Warrior Tasks and Battle Drills. PRS = Performance Rating Scales. ALQ = Army Life Questionnaire.

[a] Sample sizes for six TAPAS dimensions were considerably smaller than the other dimensions ($n = 2 - 10$). * Common TAPAS Scales = TAPAS dimensions that are included in all TOPS composites.

Table D.6. ***Summary of the Correlations between AFQT, TAPAS, and Selected Attrition Criteria for Tier 1 Soldiers***

	Attrition				
Predictor	6-Mos	12-Mos	18-Mos	24-Mos	30-Mos
AFQT	**-.06**	**-.06**	**-.07**	**-.11**	**-.19**
Individual TAPAS Scales					
Achievement	**-.02**	**-.02**	**-.02**	**-.03**	**-.03**
Adjustment	**-.01**	**-.02**	**-.02**	-.01	.00
Adventure Seeking [a]	-.01	.17	--	--	--
Attention Seeking	**-.03**	**-.03**	-.01	-.01	-.02
Commitment to Serve [a]	.03	.01	--	--	--
Cooperation	.00	.00	-.01	.00	.01
Courage [a]	.00	-.19	--	--	--
Dominance	**-.02**	**-.02**	**-.02**	**-.02**	**-.06**
Even Tempered	-.01	-.01	-.01	-.01	.00
Intellectual Efficiency	**-.01**	**-.01**	**-.01**	**-.03**	**-.04**
Non-Delinquency	**.01**	**.01**	.01	.00	.00
Optimism	**-.02**	**-.02**	**-.02**	**-.02**	**-.04**
Order	**.01**	**.02**	**.02**	**.02**	**.03**
Physical Conditioning	**-.07**	**-.08**	**-.07**	**-.09**	**-.11**
Responsibility	-.01	-.07	--	--	--
Self-Control	.00	.00	.00	-.01	.00
Selflessness	**.03**	**.03**	**.03**	**.04**	.01
Situational Awareness	-.03	-.04	--	--	--
Sociability	-.01	.00	**.02**	**.03**	.03
Team Orientation [a]	**-.05**	-.15	--	--	--
Tolerance	.01	**.01**	**.01**	.01	.01
TOPS Composites (Original)					
Can-Do	**-.01**	**-.02**	**-.02**	**-.03**	**-.04**
Will-Do	**-.02**	**-.03**	**-.04**	**-.04**	**-.05**
TOPS Composites (Revised)					
Can-Do	**-.02**	**-.02**	**-.03**	**-.05**	**-.06**
Will-Do	**-.06**	**-.07**	**-.06**	**-.08**	**-.10**
Adaptation	**-.06**	**-.07**	**-.08**	**-.09**	**-.11**

Note. Estimates are the observed point-biserial correlation *(r_{pb})* between Soldiers' predicted probability of an event (e.g., attrition, graduating IMT without a restart) and their actual behavior. Large, positive r_{pb} values mean that the TOPS composite or scale positively predicted Soldiers' actual behavior. Correlations in bold are statistically significant ($p < .01$, two-tailed).Correlations based on fewer than 50 cases are not reported. 6-Mos n = 55,683 - 58,911; 12-Mos n = 42,342-42,526 - ; 18-Mos n = 29,962 -29,884; 24-Mos n = 15,980 - 15,906; 30-Mos n = 5,095 - 5,064.

[a] Sample sizes for six TAPAS dimensions were considerably smaller than the other dimensions (n = 19 - 1,622).

Table D.7. ***Summary of the Correlations between AFQT, TAPAS, and Selected Attrition Criteria for Tier 2 Soldiers***

	Attrition				
Predictor	6-Mos	12-Mos	18-Mos	24-Mos	30-Mos
AFQT	-.01	-.05	-.08	-.09	-.10
Individual TAPAS Scales					
Achievement	-.02	-.03	.04	.03	.02
Adjustment	-.03	-.04	.08	.00	.03
Adventure Seeking [a]	.00	--	--	--	--
Attention Seeking	-.04	-.05	-.06	-.11	-.08
Commitment to Serve [a]	.10	--	--	--	--
Cooperation	.02	.05	.06	-.07	-.04
Courage [a]	-.06	--	--	--	--
Dominance	.00	-.03	.02	-.01	.03
Even Tempered	.02	.03	.06	.04	.06
Intellectual Efficiency	.00	.00	.09	.03	.02
Non-Delinquency	.03	.00	-.03	.08	.06
Optimism	-.03	-.04	-.01	-.03	-.02
Order	-.01	-.01	-.05	-.09	-.11
Physical Conditioning	-.03	-.05	.03	.09	.10
Responsibility	.13	--	--	--	--
Self-Control	.03	**.09**	**.24**	**.26**	**.23**
Selflessness	.04	.02	.04	.00	-.02
Situational Awareness	.00	--	--	--	--
Sociability	.00	-.01	-.04	-.08	-.06
Team Orientation [a]	.07	--	--	--	--
Tolerance	.01	-.02	.09	.01	-.01
TOPS Composites (Original)		--	--	--	--
Can-Do	.00	-.02	.03	.02	.00
Will-Do	.02	.00	.07	.17	.16
TOPS Composites (Revised)		--	--	--	--
Can-Do	.01	.01	.09	.08	.07
Will-Do	-.03	-.06	.04	.06	.08
Adaptation	-.01	-.01	.10	**.20**	**.22**

Note. Estimates are the observed *point-biserial correlation (r_{pb})* between Soldiers' predicted probability of an event (e.g., attrition, graduating IMT without a restart) and their actual behavior. Large, positive r_{pb} values mean that the TOPS composite or scale positively predicted Soldiers' actual behavior. Correlations in bold are statistically significant ($p < .01$, two-tailed).Correlations based on fewer than 50 cases are not reported. 6-Mos n = 1,620 - 1,827; 12-Mos n = 827 - 835; 18-Mos n = 226 - 233; 24-Mos n = 106 - 113; 30-Mos n = 101 - 108.

[a] Sample sizes for six TAPAS dimensions were considerably smaller than the other dimensions (n = 1 - 103).

Table D.8. ***Summary of the Correlations between AFQT, TAPAS, and Selected Attrition Criteria for Tier 1 + 2 Soldiers***

	Attrition				
Predictor	6-Mos	12-Mos	18-Mos	24-Mos	30-Mos
AFQT	**-.06**	**-.06**	**-.07**	**-.11**	**-.19**
Individual TAPAS Scales					
Achievement	**-.02**	**-.02**	**-.02**	**-.03**	**-.03**
Adjustment	**-.01**	**-.02**	**-.02**	-.01	.00
Adventure Seeking [a]	-.01	.17	--	--	--
Attention Seeking	**-.03**	**-.03**	-.01	-.01	-.03
Commitment to Serve [a]	.04	.00	--	--	--
Cooperation	.00	.00	-.01	.00	.01
Courage [a]	.00	**-.24**	--	--	--
Dominance	**-.02**	**-.02**	**-.02**	**-.02**	**-.06**
Even Tempered	.00	.00	-.01	-.01	.00
Intellectual Efficiency	**-.01**	-.01	**-.01**	**-.03**	**-.04**
Non-Delinquency	**.01**	**.01**	.01	.00	.00
Optimism	**-.02**	**-.02**	**-.02**	**-.02**	**-.03**
Order	**.01**	**.02**	**.02**	**.02**	.03
Physical Conditioning	**-.06**	**-.08**	**-.07**	**-.09**	**-.11**
Responsibility	.00	-.02	--	--	--
Self-Control	.01	.00	.00	.00	.00
Selflessness	**.03**	**.03**	**.03**	**.04**	.01
Situational Awareness	-.03	-.04	--	--	--
Sociability	-.01	.00	**.02**	**.02**	.02
Team Orientation [a]	-.04	-.13	--	--	--
Tolerance	**.01**	**.01**	**.02**	.01	.01
TOPS Composites (Original)					
Can-Do	**-.01**	**-.02**	**-.02**	**-.03**	**-.04**
Will-Do	**-.02**	**-.03**	**-.04**	**-.04**	**-.04**
TOPS Composites (Revised)					
Can-Do	**-.01**	**-.02**	**-.03**	**-.05**	**-.06**
Will-Do	**-.06**	**-.07**	**-.06**	**-.07**	**-.10**
Adaptation	**-.06**	**-.07**	**-.08**	**-.09**	**-.11**

Note. Estimates are the observed point-biserial correlation (r_{pb}) between Soldiers' predicted probability of an event (e.g., attrition, graduating IMT without a restart) and their actual behavior. Large, positive r_{pb} values mean that the TOPS composite or scale positively predicted Soldiers' actual behavior. Correlations in bold are statistically significant ($p < .01$, two-tailed).Correlations based on fewer than 50 cases are not reported. 6-Mos n = 57,303 - 60,738; 12-Mos n = 43,169 - 43,361; 18-Mos n = 30,110 - 30,195; 24-Mos n = 16,012 - 16,093; 30-Mos n = 5,127 - 5,203.

[a] Sample sizes for six TAPAS dimensions were considerably smaller than the other dimensions (n = 24 - 1,725).